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Competition Growing Sharper

Further Decline in Prices of Finished Products, Though Volume Keeps Up—Reduction in Tin Plates

Active competition is steadily crowding prices of finished steel closer to the cost line. Any satisfaction manufacturers get from the sustained volume of current business is tempered by concern over diminishing profits.

An important development of these conditions is that steel manufacturers in the Central West are asking the railroads which haul their raw materials to adjust freight rates on these to bring them more in line with existing prices for finished products. The movement is of far-reaching import. It involves the long established rates on ore from Lake Superior mines to upper lake docks; but what is of even more significance is its bearing upon the relative competitive ability of mills in the Pittsburgh, Valley and Wheeling districts, on the one hand, as against those in the Chicago, Buffalo and other districts. It brings up also the question of the relative advantages of the Steel Corporation, with its ore-carrying roads leading to upper lake and from lower lake ports, and the independent steel manufacturers who pay existing freight rates.

It would seem that this question of freight reduction is just now given precedence with a number of steel companies over that of wage reduction, which only recently was being seriously considered. Wage readjustments seem less imminent than was the case a few weeks ago, when the market, so far as prices are concerned, was in better condition than it is today. The scarcity of labor in the coke regions is well known. There are signs in some iron and steel works districts that much of the surplus labor of a few months ago has been absorbed.

The large number of vessels placed with Eastern shipyards is in part due to low prices for steel. The Maryland Steel Company in contracting this week to build four steamers for the American-Hawaiian Steamship Company has filled its ways for nearly eighteen months. One and possibly two other vessels are planned by the same company for the Panama Canal. The New York Shipbuilding Company has taken three large steamers for the oil trade, and two vessels for the coastwise trade are pending. Pittsburgh mills have carried off nearly all the plates and shapes for the recent vessel lettings in the East.

Steel for Section 12 of the Lexington avenue extension of the New York Subway, 5000 tons, was placed this week. That for Section 15 will follow at once, while four sections remain to be let. The two bridges let by the Central Railroad of New Jersey, 4700 tons, show to what depth prices have gone, the successful bidder naming 2.05c. erected.

Several railroads, including the Pennsylvania and

the B. & O., are figuring on rail requirements for 1912, which are now expected to be somewhat less than for this year. No change from the \$28 basis for Bessemer rails is looked for. More railroad bridge work is projected and considerable steel car business is being figured on under the inducement of very low prices. The New York Central is taking bids on 1200 frogs, an unusually large single contract.

Even at 1.10c. at Pittsburgh for steel bars, forward contracting is not heavy. Leading buyers are covered to July, 1912, and as the market declines these contract prices are readjusted in monthly settlements.

The chief formal reduction in prices this week was that in tin plates from \$3.60 to \$3.40 per base box. This is \$9 a ton lower than the 1907 level, which is in line with reductions in other products. Meat packers and other important consumers are expected to contract soon for the first half of next year.

Pig-iron markets have made no response in prices to the favorable statement concerning stock reductions in September. In the Central West, where stocks declined very considerably, the weakness has been most pronounced. Southern No. 2 iron has sold at \$9.75, Birmingham, for early shipment, and iron for the first quarter can be had at \$10. Northern furnaces are more aggressive and lower prices have been made by Buffalo and northern Ohio furnaces.

In steel making pig iron the largest pending business is 6000 tons of basic for eastern Pennsylvania delivery in the first quarter of 1912. Bessemer iron is weaker to the extent that at \$14.50, the recent price for the last quarter, iron can now be had for the first half of 1912.

Steel Makers Move for Lower Freights

Manufacturers of iron and steel in the Pittsburgh, Mahoning and Shenango Valley and Wheeling districts are taking up with the railroads which haul their raw materials the question of adjusting freight rates on these so that they shall be more in line with existing prices for finished products. It would probably be more accurate to say that the movement is also as much concerned with bringing the rates on iron ore, coal and coke in the districts named into line with rates on the same materials shipped to other districts and, in some cases, from districts other than those which supply the iron and steel manufacturers of the Central West with their raw materials. It is stated that conferences have been held by important independent steel manufacturers and that the result of their deliberations will now be brought to the attention of railroad officers. The railroads chiefly interested are the Baltimore & Ohio, the Pennsylvania, the Lake Shore, the Pittsburgh & Lake Erie, the Bessemer & Lake Erie and the ore carrying roads of Minnesota, Wisconsin and Michigan.

The data gathered in support of the contention of the steel manufacturers show a considerable inequality in existing rates on iron ore, coal and coke. Comparisons have been made between the rate per ton per mile on iron ore between Lake Erie ports and the Valley, Pittsburgh and Wheeling districts, and the rates on iron ore from Lake Erie to more remote producing districts. Other comparisons have been made between the ton-mile rate on Pennsylvania coal and coke to furnaces in eastern Ohio and western Pennsylvania and the rates on Pennsylvania coal and coke to the Buffalo district, and on West Virginia and

Virginia coal and coke to the Chicago district. These show, it is stated, that as against 8 mills per ton per mile for assembling ore and fuel at some plants in the Valley, Pittsburgh and Wheeling districts, other districts have rates as low as 4½ mills per ton-mile.

The movement referred to is like that which pig iron manufacturers in the South have recently undertaken for the lowering of freight rates on pig iron from Southern furnaces to Northern districts, in being immediately prompted by the low levels to which prices have fallen. For some time, also, as already referred to in these columns, steel manufacturers in the Central West have been considering seriously the necessity of a readjustment of labor costs. Thus far, however, no wage reductions have been made either at the blast furnaces or the steel works of the Central West. The indications are, moreover, that such reductions are even less likely to be made now than was the case a few weeks ago, when prices of finished steel products were from \$1 to several dollars a ton higher than they are to-day. Every effort has been made by works managers to increase the efficiency of present operating forces, and some slight reductions in numbers have been made, particularly in the various mechanical lines having to do with maintenance. So far as the main bodies of workmen at the various steel plants are concerned, however, they are at present quite well employed and no marked surplus of labor exists in the chief iron and steel manufacturing centers. The attention of manufacturers has thus shifted rather toward freight readjustment than to labor readjustment.

In view of the important interests involved and the intricacy of the problem of rate making, as well as the long history of existing conditions, it is a question whether the readjustment sought will come in the near future. It involves a new relation between raw-material rates in the various districts which, once established, would extend considerably beyond the life of present prices for finished product. It is stated that what is sought is a voluntary rearrangement of rates by the railroad companies, and that at present there is no plan for taking the matter before the Interstate Commerce Commission.

The Trend of Railroad Revenues

The Bureau of Railway Economics, maintained at Washington by the railroads, has issued its bulletin of railroad earnings for the month of July. Its reports are compiled from the same data as those of the Interstate Commerce Commission, but for a given month its report is made somewhat earlier than that of the Commission, probably because it does not wait for reports from some minor roads. The showing of rail operations per mile of road, the only fair basis of comparison of railroad operations, is as follows, with the difference from the preceding July indicated:

	July, 1911.	Change.
Total operating revenue....	\$988	—\$22
Total operating expenses....	671	— 17
Net operating revenue.....	\$317	— \$5

A comparison with July, 1909, is not possible, as when figures for that month were compiled the Bureau's practice was to include roads over 500 miles long, whereas now it includes roads over 50 miles long, and on the latter basis the general averages are slightly decreased, because the short roads ordinarily have lighter operations than the average.

The July comparison is a favorable one from the viewpoint of railroad economy, as there is a greater relative decrease in operating expenses than in total operating revenue. The total revenue decreased \$22, or 0.218 per cent., while the operating expenses decreased \$17, or 0.248 per cent., which left a decrease in net operating revenue of \$5, or 0.155 per cent. Normally it is expected that expenses will decrease less rapidly than total revenue.

Since January revenues per mile have been falling behind those of a year earlier; but the maximum loss was in March, each month since then showing a narrowing of the gap, until for July the loss from the previous July is very small in total revenue and almost negligible in net revenue. The year 1910, however, with which these comparisons are being made, compared very favorably with 1909 as regards total revenue but unfavorably as regards expenses; total revenues increased greatly, but operating expenses almost as much, so that the gain in net revenue was trifling. In general, then, the showing just made for July last indicates that the new fiscal year is running substantially as well as the average of the two preceding fiscal years.

Taking the reports of the Interstate Commerce Commission, which antedate those of the Bureau of Railway Economics, comparisons can be made as far back as July 1, 1907, when the uniform accounting system went into effect. Last July does not compare altogether favorably with July, 1907, but the decline in total operating revenue is only \$24, and the loss in net only \$17. Compared with July, 1908, last July's showing is very good indeed. Making a general comparison of last July with the average monthly results in four preceding years, there is a very substantial gain in total revenue and also a very substantial gain in net revenue.

The favorable showings just made mean more than the bare figures indicate, particularly from the iron trade's viewpoint of regarding the railroads as a customer rather than as a public servant. These comparisons are all per mile of line, which makes the railroad viewpoint, but comparisons of total operations must show very substantial gains, because each year the total railroad mileage of the country increases. The Interstate Commerce Commission's report for July, 1907, covered operations of 210,158 miles of road; that for June, 1911, covered 243,732 miles, the increase in four years, less one month, being 15 per cent. Even did the record of operations per mile of line remain stationary in that period, the total of railroad operations would increase; more traffic would be handled, more train miles would be run and more rails would wear out.

It may be added that statistics of the total freight ton-mileage compiled over a long period of years show that continuous growth in traffic is the almost invariable rule. In the period of 29 years from 1882 to 1910, fiscal years, inclusive, there were only four years, 1894, 1895, 1908 and 1909, in which all previous records for freight movement were not broken. The total increase in ton-mileage in the 29 years was 553 per cent., which represented an average gain, one year over the preceding, of 6.9 per cent., or an average of one doubling in every period of between 10 and 11 years. The iron trade now fully realizes that railroad consumption of iron and steel through the wearing out of material is much larger than formerly, while consumption for new erection is less important

than it was in the boom periods in which there was heavy building of new road; and it may be regarded as certain that with very slight backsets the wearing out of railroad material will continue to grow, through almost constant increase in the total volume of traffic.

Overhead Expense and Cost Systems

The theory on which the accepted cost systems of to-day are based has for its backbone the attempt to recover through the selling price the expenses entailed in manufacture plus a legitimate profit. To accomplish this, there is added to the known cost of labor and material a certain arbitrary amount supposed to represent the overhead expense involved in the handling of the class of goods manufactured. The sum of these three quantities is accepted as the cost of production. This increment to cover overhead expense bears a varying ratio to the labor and material cost, being in some branches of trade equal in amount to the sum of the labor and material. Evidently, then, it is an item of cost well worthy of consideration, being as important in any manufacturing establishment as any of the other things for which trained executives are paid large salaries.

It is not the intention, however, to suggest that the general expense account is being neglected in the ledgers, for such is not the case. Nevertheless, strong grounds exist for the conviction that the widely accepted method of recovering this general expense by a level pro rata apportionment on all goods manufactured works a serious disadvantage and makes subtle inroads on the year's profits. Without doubt this procedure is one of the direct causes for astonishment to the board of directors when the auditor's statement shows less than the expected profit. Without doubt, too, it is a potent factor in a firm's losing to a competitor a class of business which had gone through the works steadily for so many years as to be considered standard.

No one at all familiar with manufacturing will for a moment defend the principle of charging the overhead or general expense against all articles by a set rule regardless of actual conditions. Yet that very thing is done every day in many factories practically unchallenged. A class of goods which is easily handled and on which little trouble arises, which, perhaps, calls for almost no expense for tool work or for power, is loaded with what is in its case an abnormal overhead expense burden. And whenever it is necessary to make a new contract there may be great hesitancy in making a slightly lower price, because the margin is so small between the selling price and the figured cost of production, as calculated by the prevailing system. Really good profitable business is known to have been turned away because of a negative margin showing up from this same comparison of quoted price and calculated cost.

One of the largest manufacturing establishments in this country does a business of which one-half is for standard apparatus and the remainder for special. Each year the proportion changes, the standard work giving way to the special. At the yearly meetings of the sales department the greatest pressure is put upon the salesmen to sell more standard product. The reply has always been that competitors continually underbid, that the factory cannot build the standard apparatus cheaply enough. There follows at once each

year an investigation as to design and productive labor cost. The material cost is reduced and a few cents are cut off the labor items here and there although the engineering and the shop force feel in their very bones that the design is as good as any on the market and that the labor cost is as low as can be expected to secure good workmanship. Moreover, going through in such large quantities, the best conditions for cheap manufacture exist. But when the revised figures have passed through to the selling department the whole thing has been "killed" by the addition of an overhead which, though figured strictly to rule, is entirely out of proportion. Small wonder, then, that every one throws up his hands and that the profitable standard business slips away, a big slice this year, another next year.

Nor is there any good excuse for continuing in this error, nor reason why a more equitable scheme cannot be worked out. The present method, it must be admitted, is far in advance of the old "flat rate" system. Yet the practice of apportioning overhead expense on the basis of productive labor is to-day as obsolete, or should be, as the hand-loom. The cry for actual costs never was so loud as it is to-day, the need never so urgent. Still, although a man will grow sick at heart if he inadvertently omits from his labor cost an item of 10 or 15 cents per 1000 pieces, he will cheerfully add to his labor total an overhead which may be twice that too high.

We have fallen into this habit principally to simplify our accounting, and partly because it was a satisfaction to get away from the previous crude calculations. We have come to a time now, however, when by a very simple change in our cost accounting system we can let sound judgment dictate our selling prices, instead of weakly accepting as final the results of a calculation full of assumptions and averages. And that the industrial engineer of the morrow will solve the question we have strong belief. It is almost in our power to take only the business in which there is a profit; we shall soon be cured of the myopia which prevents us from recognizing a good paying proposition from one that is not.

Correspondence

The Production of Vanadium Steel in 1910

To the Editor: My attention has been called to a communication from George E. Lees, of Pittsburgh, which appeared in *The Iron Age* for October 5, and which originally appeared in the *Engineering and Mining Journal* of September 30, in relation to the production in the United States in 1910 of vanadium steel. I have had the reports which we received from the steel makers gone over very carefully and give below the tonnage reported to us of all alloyed steel in which vanadium was used alone or in conjunction with other alloys.

Alloyed Vanadium Steel:		Gross Tons.
Vanadium steel ingots and castings.....		9,049
Chrome-vanadium steel ingots and castings.....		7,335
Nickel-chrome-vanadium steel ingots and castings.....		8,971
Nickel-vanadium and nickel-molybdenum vanadium steel ingots and castings.....		489
Total		25,844

If Mr. Lees had read carefully the text under the first table in the article which appeared in the *Bulletin* of the American Iron and Steel Association for October 1, he would have noticed that the figures given for chrome-vanadium and nickel-chrome-vanadium steel, the production of both of which was included in the total of 30,816 tons given for "other alloys," related to the production of chrome-vanadium and nickel-chrome-vanadium steel by the basic open-hearth process only. In addition, a small ton-

nage of chrome-vanadium and nickel-chrome-vanadium ingots and castings was made in 1910 by the acid open-hearth, crucible and electric processes.

I have no knowledge of the production of vanadium in this country in 1910 or in any other year. My impression is that the production is not annually collected. Nor do I know how much vanadium is annually consumed by our steel manufacturers and by gray iron and malleable foundries. But, as already stated, the figures given in the above statement cover fully, so far as reported to us by the manufacturers, the production of vanadium steel ingots and castings in 1910, when vanadium was used alone as an alloy or in conjunction with other alloys.

I may add that in addition to the alloyed steel enumerated above and in the table which appeared in the *Bulletin*, the steel manufacturers also reported to us the production of tungsten, nickel-tungsten, tungsten-chrome, aluminum, and various other alloyed steel ingots and castings, the production of which is included in the drag-net phrase "other alloys" in the *Bulletin* tables.

JAMES M. SWANK.

PHILADELPHIA, October 16, 1911.

The Production of Alloyed Steels

To the Editor: In your issue of October 5 you give the statistics of alloyed steel production as made public by the American Iron and Steel Association for the year 1910. To the average reader I believe these statistics will be misleading, and I would like to make the following criticisms in the hope that they will clarify the subject.

It is admitted by metallurgists and manufacturers in general that the so-called titanium steel is not an alloy steel. It may therefore be eliminated from the report, bringing the total production of alloyed steel for 1910 down to 241,503 gross tons.

The figures given for nickel-chrome steel include 8760 tons of nickel-chrome-vanadium steel, and the total for chrome steel includes 6903 tons of chrome-vanadium steel. The report of the association is therefore misleading in both these items, and the production of vanadium alloys on this basis becomes:

	Tons.
Straight vanadium steel.....	9,049
Nickel-chrome-vanadium steel	8,760
Chrome-vanadium steel	6,903
Total vanadium alloys.....	24,712

Eliminating titanium steel for the reasons given above, the total alloyed steel production for 1910 was 241,503 gross tons, while the various types of vanadium steel aggregated 24,712 gross tons, or more than 10 per cent. of the reported total. This does not seem to be a bad showing for a type of steel that is relatively new, especially when it is considered that the nickel-chrome steel, according to the report, is largely composed of a natural alloy steel made from ores containing both nickel and chromium, and that this steel is not, from the metallurgical standpoint, anything like the nickel-chrome steel that is built up in the furnace by deliberate additions of nickel and chromium. It is produced as an expedient and frequently sold without any mention of its chemical analysis.

Even on the above interpretation of the report, the total production of vanadium steel, accepted at 24,712 gross tons, must leave a very notable amount of vanadium unaccounted for. A contribution to *London Engineering* in May, 1911, gives the consumption of metallic vanadium in the United States during the year 1910 as 250,000 lb., a figure we have no reason to doubt. On the average consumption of 5 lb. of vanadium to the ton, this would bring the total vanadium steel to 50,000 tons. Exaggerating the case, and assuming that all this vanadium had been used in tool steel, where the consumption would be about 20 lb. to the ton, the production would have been 12,500 tons, while, according to the report, vanadium steel, as such, is given as only 9049 tons.

The writer has been in communication with all the large steel producers in the United States, and is in possession of data bringing the total vanadium steel production in ingots and castings to a conservative figure of 40,000 net tons. When it is remembered that vanadium steel at present is too expensive to be employed for rails and structural material, it will be seen that even 10 per cent. of the total alloyed steel production represents a very generous

consumption of vanadium steel as well as a very rapid growth in its employment, considering the recent date at which it was introduced as a commercial alloy.

Tendencies must be considered quite as much as facts, and the point that should be brought out in a comment of this kind is the rate of increase in the other alloy steels, compared with the rate of increase in the use of vanadium steels. On this basis I think it is certain that vanadium steels take the first place, as it is only within the last few years that the element vanadium has been procurable at a price and in quantities that have made its commercial application possible. Its production and use, therefore, depend far more upon the availability of ferrovanadium than upon the competition of some other alloy.

G. E. LEES,

Advertising Manager Vanadium Sales Company of America.
PITTSBURGH, PA., October 9, 1911.

Speculation by Makers of Scrap

To the Editor: Why is it that so many concerns working in iron and steel speculate in scrap? Is it a contagion from the scrap dealer? I have seen staid conservative business men who are producers of scrap and who refuse to speculate in the raw materials which they consume, buying only a little in advance of their needs or to cover contracts which they have taken, but who will almost invariably speculate in scrap. They cannot be as well informed on conditions in the old material market as a scrap dealer, whose business it is to be posted on that market every day. Nevertheless, I have seen such manufacturers hold their scrap through declines of several dollars a ton. Meantime it is exposed to the weather, which through disintegration causes a loss of 5 to 10 per cent., while the material which remains deteriorates in value by a considerable amount. The scrap pile also occupies space which should be valuable in regular manufacturing operations; and finally capital is tied up which should be worth 6 per cent. a year.

OLD MATERIAL.

What the Sherman Law Forbids

Not Restraint of Competition Without Resulting Restraint of Trade

Interesting and doubtless to many readers surprising statements concerning the Sherman law are made by Albert H. Walker, attorney, of New York, in a communication to the New York Sun. Mr. Walker is the author of the book, "The History of the Sherman Law," and on his long study of that statute and of the literature relating to its enactment, as well as of all the decisions of the courts relating to it, he bases six conclusions, which are reproduced below from his article. They serve to clear up some questions which much of the comment from high official quarters has only tended to befog:

1. The first section of the Sherman law prohibits restraint of interstate or international trade or commerce, but it does not expressly prohibit restraint of competition and it does not impliedly prohibit restraint of competition, except where restraint of competition results in restraint of trade or commerce, which is far from always being the case. For example, Section 1 of the Sherman law does not prohibit the formation of partnerships or corporations or the consolidation of corporations, or the sale of the good will of any business coupled with a contract to refrain from competing with the business thus sold. In short, if anybody will present to me any case in which a combination of men or corporations operates fairly and ethically I will undertake to show that that combination does not violate the Sherman law, and back up my showing by statements and arguments which nobody can overthrow.

2. Section 2 of the Sherman law, in prohibiting monopolizing and attempts to monopolize, is not violated by any person or corporation which does not work by the aid of impediments placed in the paths of competitors, even if that person or corporation does acquire by means of superior skill or superior facilities more than half or even the whole of a particular part of interstate or international commerce.

3. There is no difference between that limitation which Chief Justice White sought to insert in the Sherman law by means of the word "unreasonable" in his dissenting opinion in the Trans-Missouri case in 1897 and the limitation which he sought to introduce into that statute by the word "undue" in his obiter dicta in 1911 in the Standard Oil case and the American Tobacco case. Those words, if they had been really inserted in the statute, would introduce confusion instead of clarification. But the attempt of Chief Justice White to insert the word "undue" into the statute by his obiter dicta in the Standard Oil case and the American Tobacco case was no more effective than his attempt to insert the word "unreasonable" into the statute by his dissenting opinion in the Trans-Missouri case, for obiter dicta are like dissenting opinions in having no binding force on anybody.

4. President Taft was not speaking accurately when he said in his recent Detroit speech that the decisions of the Supreme Court in the Standard Oil case and the American Tobacco case mean "that they find that any contract made for the purpose of excluding competition, controlling prices or of maintaining a monopoly in part or in whole is contrary to the statute," for nobody can deduce from either of those decisions the proposition that every combination which "excludes competition" operates "in restraint of trade" and therefore violates the Sherman law.

5. The Sherman law originated with Senator Sherman, but it was put by Senator Edmunds into the exact shape in which it was enacted by Congress; and being put into that shape it was unanimously approved by the nine members of the Senate Judiciary Committee in 1890 and by every member of the House of Representatives and by every Senator except Senator Blodgett of New Jersey. In the eye of the law of construction of statutes it is the clearest and most complete and accurate of all the multitudinous statutes which I during my long life as a lawyer and law author ever read. The "confusion worse confounded" which has been made to surround that statute for more than twenty-one years never had the slightest real necessity. Quite otherwise than this, it has been artificially worked up by the lawyers employed by violators of the statute and by numerous statesmen and other politicians who wanted to confuse the matter in order that they might avoid displeasing the people at the same time that they avoided displeasing the violators of the law, and by able editors of newspapers who discussed the matter in good faith but without time enough to separate the chaff of the lawyers and statesmen from the wheat of the statute itself.

6. Any really able lawyer who will impartially study the language of the Sherman law and then impartially study all of the one hundred decisions which have been rendered by the courts relevant to that law can reliably advise any person or corporation whether the business in which that person or corporation is engaged or concerned does or does not violate the Sherman law. But no such advice can be given by any lawyer whose mind is confused and distorted by the hundreds of unfounded and conflicting statements which can be collected out of the obiter dicta of courts or out of the speeches of lawyers or statesmen.

Armor Plate Decision.—A decision of importance was handed down by the United States Circuit Court of Appeals at Philadelphia October 11, when it dismissed four suits brought by the Fried. Krupp Aktien Gesellschaft of Germany against the Midvale Steel Company of Philadelphia to restrain the Pennsylvania corporation from infringing on patents for a process of manufacturing armor plate. The decision was given by Judge Joseph Buffington and sustains the opinion of the Circuit Court, which had decreed that the evidence produced before the lower court was "not sufficiently satisfactory either in quality or amount" to establish infringement. The appellate court goes a step further and declares that two certain claims in two of the Krupp patents are invalid and that, therefore, there could not be an infringement.

To take care of its growing business in the Philadelphia territory the MacArthur Concrete Pile & Foundation Company, 11 Pine street, New York, N. Y., has appointed Louis E. Welsh district manager for New Jersey, Pennsylvania, Delaware, Maryland and the District of Columbia, his office being located in the Perry Building, Philadelphia, Pa.

The Iron and Metal Markets

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics.

At date, one week, one month and one year previous.

	Oct. 18, 1911.	Oct. 11, 1911.	Sept. 20, 1911.	Oct. 19, 1910.
PIG IRON, Per Gross Ton:				
Foundry No. 2 standard, Philadelphia	\$15.00	\$15.00	\$15.00	\$15.75
Foundry No. 2, Valley furnace	13.50	13.50	13.50	14.00
Foundry No. 2 Southern, Cincinnati	13.25	13.25	13.25	14.25
Foundry No. 2, Birmingham, Ala.	10.00	10.00	10.00	11.00
Foundry No. 2, at furnace, Chicago*	14.50	14.50	14.50	16.00
Basic, delivered, eastern Pa.	14.50	14.50	14.75	15.00
Basic, Valley furnace	12.50	12.50	12.60	13.00
Bessemer, Pittsburgh	15.40	15.40	15.90	15.90
Gray forge, Pittsburgh	13.65	13.65	13.90	14.15
Lake Superior charcoal, Chicago	16.50	16.50	16.50	18.00

COKE, CONNELLSVILLE,

Per Net Ton, at Oven:

Furnace coke, prompt shipment.	1.50	1.50	1.50	1.60
Furnace coke, future delivery.	1.55	1.60	1.60	1.70
Foundry coke, prompt shipment	1.80	1.80	1.85	2.10
Foundry coke, future delivery.	2.00	2.00	2.10	2.25

BILLETS, &c., Per Gross Ton:

Bessemer billets, Pittsburgh	20.00	20.00	21.00	23.50
Open hearth billets, Pittsburgh	19.00	19.00	21.00	24.00
Forging billets, Pittsburgh	24.00	25.00	26.00	29.00
Open hearth billets, Philadelphia	21.40	21.40	22.40	26.00
Wire rods, Pittsburgh	26.00	26.00	27.00	28.50

OLD MATERIAL, Per Gross Ton:

Iron rails, Chicago	13.50	13.75	14.50	16.00
Iron rails, Philadelphia	16.50	16.50	17.00	18.00
Car wheels, Chicago	12.50	12.50	12.75	14.00
Car wheels, Philadelphia	11.75	11.75	12.50	13.75
Heavy steel scrap, Pittsburgh	12.00	12.00	12.75	14.25
Heavy steel scrap, Chicago	9.75	10.00	10.50	12.25
Heavy steel scrap, Philadelphia	12.00	12.00	12.50	13.75

FINISHED IRON AND STEEL,

Per Pound:	Cents.	Cents.	Cents.	Cents.
Bessemer rails, heavy, at mill.	1.25	1.25	1.25	1.25
Iron bars, Philadelphia	1.22	1.22½	1.22½	1.40
Iron bars, Pittsburgh	1.20	1.20	1.25	1.45
Iron bars, Chicago	1.17½	1.20	1.22½	1.35
Steel bars, Pittsburgh	1.10	1.15	1.20	1.40
Steel bars, tidewater, New York	1.26	1.31	1.36	1.56
Tank plates, Pittsburgh	1.15	1.20	1.30	1.40
Tank plates, tidewater, New York	1.31	1.36	1.46	1.56
Beams, Pittsburgh	1.20	1.20	1.35	1.40
Beams, tidewater, New York	1.36	1.36	1.51	1.56
Angles, Pittsburgh	1.20	1.20	1.35	1.40
Angles, tidewater, New York	1.36	1.36	1.51	1.56
Skelp, grooved steel, Pittsburgh	1.15	1.15	1.20	1.30
Skelp, sheared steel, Pittsburgh	1.25	1.25	1.30	1.40

SHEETS, NAILS AND WIRE,

Per Pound:	Cents.	Cents.	Cents.	Cents.
Sheets, black, No. 28, Pittsburgh	1.85	1.85	1.90	2.20
Wire nails, Pittsburgh	1.65	1.65	1.65	1.70
Cut nails, Pittsburgh	1.50	1.50	1.55	1.65
Barb wire, galv., Pittsburgh	1.95	1.95	1.95	2.00

METALS,

Per Pound:	Cents.	Cents.	Cents.	Cents.
Lake copper, New York	12.50	12.50	12.60	12.87½
Electrolytic copper, New York	12.25	12.25	12.37½	12.80
Spelter, St. Louis	6.10	6.00	5.90	5.45
Spelter, New York	6.30	6.15	6.05	5.60
Lead, St. Louis	4.15	4.10	4.35	4.27½
Lead, New York	4.25	4.25	4.50	4.40
Tin, New York	41.45	41.25	38.87½	37.62½
Antimony, Hallett, New York	7.70	7.70	7.75	7.75
Tin plate, 100-lb. box, New York	\$3.64	\$3.84	\$3.84	\$3.84

*The average switching charge for delivery to foundries in the Chicago district is 50c. per ton.

†These prices are for largest lots to jobbers.

Prices of Finished Iron and Steel f.o.b. Pittsburgh

Freight rates from Pittsburgh in carloads, per 100 lb.: New York, 16c.; Philadelphia, 15c.; Boston, 18c.; Buffalo, 11c.; Cleveland, 10c.; Cincinnati, 15c.; Indianapolis, 17c.; Chicago, 18c.; St. Paul, 32c.; St. Louis, 22½c.; New Orleans, 30c.; Birmingham, Ala., 45c. Pacific coast, 80c. on plates, structural shapes and sheets No. 11 and heavier; 85c. on sheets Nos. 12 to 16; 95c. on sheets No. 16 and lighter; 65c. on wrought pipe and boiler tubes.

Plates.—Tank plates, ¼ in. thick, 6¼ in. up to 100 in. wide, 1.15c., base, net cash, 30 days. Following are stipulations prescribed by manufacturers, with extras:

Rectangular plates, tank steel or conforming to manufacturers' standard specifications for structural steel dated February 6, 1903, or equivalent, ¼ in. thick and over on thinnest edge, 100 in. wide and under, down to but not including 6 in. wide, are base.

Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot, are considered ¼-in. plates. Plates over 72 in. wide must be ordered ¼ in. thick on edge, or not less than 11 lb. per square foot, to take base price. Plates over 72 in. wide ordered less than 11 lb. per square foot down to the weight of 3-16-in. take the price of 3-16-in.

Allowable overweight, whether plates are ordered to gauge or weight, to be governed by the standard specifications of the Association of American Steel Manufacturers.

Extras.	Cents per lb.
Gauges under ¼ in. to and including 3-16 in. on thin-nest edge	.10
Gauges under 3-16 in. to and including No. 8	.15
Gauges under No. 8 to and including No. 9	.25
Gauges under No. 9 to and including No. 10	.30
Gauges under No. 10 to and including No. 12	.40
Sketches (including all straight taper plates) 3 ft. and over in length	.10
Complete circles, 3 ft. in diameter and over	.20
Boiler and flange steel	.10
"A. B. M. A." and ordinary firebox steel	.20
Still bottom steel	.30
Marine steel	.40
Locomotive firebox steel	.50
Widths over 100 in. up to 110 in., inclusive	.05
Widths over 110 in. up to 115 in., inclusive	.10
Widths over 115 in. up to 120 in., inclusive	.15
Widths over 120 in. up to 125 in., inclusive	.25
Widths over 125 in. up to 130 in., inclusive	.50
Widths over 130 in.	1.00
Cutting to lengths or diameters under 3 ft. to 2 ft., inclusive	.25
Cutting to lengths or diameters under 2 ft. to 1 ft., inclusive	.50
Cutting to lengths or diameters under 1 ft.	1.55
No charge for cutting rectangular plates to lengths 3 ft. and over.	

Structural Material.—I-beams, 3 to 15 in.; channels, 3 to 15 in., and angles, 3 to 6 in. on one or both legs, ¼ in. and over, 1.20c. Other shapes and sizes are quoted as follows:

	Cents per lb.
I-beams over 15 in.	1.30 to 1.35
H-beams over 18 in.	1.40 to 1.45
Angles, 3 to 6 in., inclusive, ¼ in. and up	1.20 to 1.25
Angles over 6 in.	1.30 to 1.35
Angles, 3 in. on one or both legs, less than ¼ in. thick, plus full extras as per steel bar card Sept. 1, 1909	1.25 to 1.30
Tees, 3 in. and up	1.25 to 1.30
Zees, 3 in. and up	1.20 to 1.25
Angles, channels and tees, under 3 in., plus full extras as per steel bar card Sept. 1, 1909	1.25 to 1.30
Deck beams and bulb angles	1.50 to 1.55
Hand rail tees	2.45
Checkered and corrugated plates	2.45

Sheets.—Makers' prices for mill shipments on sheets of U. S. standard gauge, in carload and larger lots, on which jobbers charge the usual discounts for small lots from store, are as follows:

Blue Annealed Sheets.		Cents per lb.
Nos. 3 to 8.....		1.25 to 1.30
Nos. 9 and 10.....		1.35 to 1.40
Nos. 11 and 12.....		1.40 to 1.45
Nos. 13 and 14.....		1.45 to 1.50
Nos. 15 and 16.....		1.55 to 1.60
Box Annealed Sheets, Cold Rolled.		
	One Pass.	Three Pass.
Nos. 10 to 12.....	1.50 to 1.55	.....
Nos. 13 and 14.....	1.55 to 1.60	.....
Nos. 15 and 16.....	1.60 to 1.65	1.70 to 1.75
Nos. 17 to 21.....	1.65 to 1.70	1.75 to 1.80
Nos. 22, 23 and 24.....	1.70 to 1.75	1.80 to 1.85
Nos. 25 and 26.....	1.75 to 1.80	1.85 to 1.90
No. 27.....	1.80 to 1.85	1.90 to 1.95
No. 28.....	1.85 to 1.90	1.95 to 2.00
No. 29.....	1.90 to 1.95	2.00 to 2.05
No. 30.....	2.00 to 2.05	2.10 to 2.15
Galvanized Sheets, of Black Sheet Gauge.		
Nos. 10 and 11.....		1.85 to 1.90
Nos. 12, 13 and 14.....		1.95 to 2.00
Nos. 15, 16 and 17.....		2.10 to 2.15
Nos. 18 to 22.....		2.25 to 2.30
Nos. 23 and 24.....		2.35 to 2.40
Nos. 25 and 26.....		2.55 to 2.60
No. 27.....		2.70 to 2.75
No. 28.....		2.85 to 2.90
No. 29.....		2.95 to 3.00
No. 30.....		3.15 to 3.20

All above rates on sheets are f.o.b. Pittsburgh, terms 30 days net, or 2 per cent. cash discount in 10 days from date of invoice, as also are the following base prices per square for painted and galvanized roofing sheets, with 2½-in. corrugations:

Gauge.	Painted.	Galvanized.	Gauge.	Painted.	Galvanized.
29		\$2.30	23	\$2.35	\$3.45
28	\$1.30	2.45	22	2.55	3.65
27	1.45	2.50	21	2.75	4.00
26	1.55	2.60	20	3.00	4.30
25	1.80	3.00	19	4.60	5.65
24	2.05	3.10	18	4.85	6.45

Wire Rods and Wire.—Bessemer, open hearth and chain rods, \$26 to \$26.50. Fence wire, Nos. 0 to 9 per 100 lb., terms 60 days, or 2 per cent. discount in 10 days, carload lots, to jobbers, annealed, \$1.45; galvanized, \$1.75. Carload lots, to retailers, annealed, \$1.50; gal-

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vanized, \$1.80. Galvanized barb wire to jobbers, \$1.95; painted, \$1.65. Wire nails, to jobbers, \$1.65.

The following table gives the price to retail merchants on wire in less than carloads, including the extras on Nos. 10 to 16, which are added to the base price:

Fence Wire, Per 100 lb.									
Nos.	0 to 9	10	11	12 & 12½	13	14	15	16	
Annealed	\$1.65	\$1.70	\$1.75	\$1.80	\$1.90	\$2.00	\$2.10	\$2.20	
Galvanized	1.95	2.00	2.05	2.10	2.20	2.30	2.70	2.80	

Wrought Pipe.—The following are the jobbers' carload discounts on the Pittsburgh basing card on wrought pipe, in effect from October 2, 1911:

	Steel		Iron	
	Black.	Galv.	Black.	Galv.
¾ and 1 in.	73	53	68	48
¾ in.	74	64	69	59
1 in.	77	67	75	65
1 in. to 1½ in.	80	72	75	67
2 in. to 3 in.	81	74	76	69

Lap Weld.			
1½ and 1½ in.	..	68	61
2 in.	77	70	72
2½ to 4 in.	79	72	74
4½ to 6 in.	78	70	73
7 to 12 in.	76	66	71
13 to 15 in.	52	..	47

Butt Weld, extra strong, plain ends, card weight.			
¾, ¾, ¾ in.	70	60	65
¾ in.	75	69	70
¾ to 1½ in.	79	73	74
2 to 3 in.	80	74	75

Lap Weld, extra strong, plain ends, card weight.			
1½ in.	..	66	60
2 in.	76	70	71
2½ to 4 in.	78	72	73
4½ to 6 in.	77	71	72
7 to 8 in.	70	60	65
9 to 12 in.	65	55	60

Butt Weld, double extra strong, plain ends, card weight.			
¾ in.	65	59	60
¾ to 1½ in.	68	62	63
2 to 3 in.	70	64	65

Lap Weld, double extra strong, plain ends, card weight.			
2 in.	66	60	61
2½ to 4 in.	68	62	63
4½ to 6 in.	67	61	62
7 to 8 in.	60	50	55

Plugged and Reamed.

1 to 1½, 2 to 3 in. Butt Weld	will be sold at two (2) points lower basing (higher price) than merchants' or card weight pipe. Butt or lap weld, as specified.
2, 2½ to 4 in. Lap Weld	

The above discounts are for "card weight," subject to the usual variation of 5 per cent. Prices for less than carloads are three (3) points lower basing (higher price) than the above discounts.

Boiler Tubes.—Discounts on lap welded steel and charcoal iron boiler tubes to jobbers in carloads are as follows:

Steel.	Charcoal Iron.
1½ to 2½ in.	1½ in.
2½ in.	1½ to 2½ in.
2½ to 3½ in.	2½ in.
3½ to 4 in.	2½ to 5 in.
5 to 6 in.	
7 to 13 in.	

2½ in. and smaller, over 18 ft., 10 per cent. net extra.

2½ in. and larger, over 22 ft., 10 per cent. net extra.

Less than carloads will be sold at the delivered discount for carloads, lowered by two points for lengths 22 ft. and under to destinations east of the Mississippi River; lengths over 22 ft. and all shipments going west of the Mississippi River must be sold f.o.b. mill at Pittsburgh basing discount, lowered by two points.

Pittsburgh

PITTSBURGH, October 18, 1911.—(By Telephone.)

Pig Iron.—No large inquiries are out. Consumers of iron are pretty well covered for the remainder of the year and do not seem disposed at this time to contract into next year, owing to the uncertainty as to whether or not prices have touched bottom. We note a sale of 500 tons of basic iron for November and December at \$12.50, Valley furnace; also a sale of 1000 tons of malleable Bessemer iron to the Pennsylvania Malleable Company at a price reported under \$13, Valley furnace, and 2000 to 3000 tons of Bessemer iron for forward delivery at \$14.50, Valley furnace. We note also sales of small lots of Northern No. 2 foundry for prompt delivery at \$13.50, Valley furnace. We quote Bessemer iron at \$14.50; basic, \$12.50; No. 2 foundry, \$13.50; malleable Bessemer, nominally, \$13; and gray forge, \$12.75, all at Valley furnace, the freight rate to the Pittsburgh district being 90c. a ton.

Steel.—Occasional inquiry has come into the market for small lots of billets and sheet bars, but consumers are covered by sliding scale contracts against which specifications are coming in at only a fairly satis-

factory rate. Prices are unchanged and we quote open hearth billets, \$19; Bessemer billets, \$20; open hearth sheet bars, \$20; Bessemer sheet bars, \$21, and forging billets, \$24, f.o.b. at maker's mill.

Steel Rails.—The Carnegie Steel Company has received an order from a Western road for 2000 tons of standard sections for prompt shipment, and has also taken a fair tonnage from other roads made up of small orders. Several of the leading railroads, among them the Baltimore & Ohio, Pennsylvania, Norfolk & Western and others, have their specifications for next year about ready, and the rail mills anticipate the placing of orders in the very near future. New demand and specifications for light rails are quite active, the Carnegie Steel Company having shipped the past week close to 2000 tons. Prices on light rails are lower, due to keener competition among the mills, and particularly from the light rail mills that reroll from old rails. We quote light rails as follows: 8 and 10-lb. sections, 1.205c.; 12 and 14-lb., 1.205c.; 16, 20 and 25-lb., 1.16c.; 30 and 35-lb., 1.15c.; 40 and 45-lb., 1.105c.

(By Mail.)

The event of the week is the reduction of 20c. per base box on tin plate, or from \$3.60 to \$3.40 for 100-lb. cokes. The reduction is a little larger than had been expected. The best that can be said for the iron market this week is that the low prices ruling on pig iron, steel and finished material are bringing out a larger volume of new business. Prices seem to be seeking a still lower level, but certainly cannot go down much further. Plates seem to have settled down to 1.15c.; structural material to about 1.20c.; steel bars to 1.10c., and No. 28 black sheets to 1.85c., at mill. A feature of the market on pig iron is that Bessemer iron has sold for delivery through the first half of next year at \$14.50, Valley furnace. There is very little doing in the other grades. The new demand for furnace and foundry coke is better, but with no improvement in prices. The scrap trade is absolutely neglected.

Ferromanganese.—Prices are being asked on 5000 tons or more, part of it for delivery this year, but most of it for the first half of 1912. Importers still continue to ask \$38 to \$38.50 for first half, but we note sales of about 600 tons for the remainder of this year and first quarter of next year at \$37, Baltimore. We quote 80 per cent. for the remainder of this year at about \$37 and for first half of next year \$37.50 to \$38, Baltimore, the freight rate to Pittsburgh being \$1.95 a ton.

Ferrosilicon.—Sales of 75 to 100 tons of 50 per cent. have been made at \$60, Pittsburgh, the highest price reached in some months. Indications are that the price will go higher. We quote 10 per cent., \$22; 11 per cent., \$23, and 12 per cent., \$24, f.o.b. cars Ashland, Ky., or Jackson, Ohio.

Muck Bar.—A sale of about 500 tons of high grade muck bar is reported at about \$28, Pittsburgh. We quote best grades, made from all pig iron, at \$28 to \$28.50, delivered at buyer's mill, Pittsburgh district.

Skelp.—The market continues very dull. We quote grooved steel skelp at 1.15c.; sheared steel skelp, 1.20c.; grooved iron skelp, 1.40c., and sheared iron skelp, 1.60c., all for delivery at consumers' mills in the Pittsburgh district.

Wire Rods.—New inquiry for wire rods is light, and prices are weak. Consumers are not specifying at a satisfactory rate against contracts, and in some cases shipments are being held up. We quote Bessemer, open hearth and chain rods at \$26, f.o.b. Pittsburgh.

Plates.—While the actual inquiry has not been received by local steel car builders it is understood that the Baltimore & Ohio Railroad is in the market for 5000 steel freight cars. The Union Tank Line, owned by the Standard Oil Company, is inquiring for 500 tank cars, and the Union Pacific Railroad for 25 steel cars. The Buffalo, Rochester & Pittsburgh is expected to place a contract in a few days for 1086 steel under-frame cars. The Woodward Iron Company is inquiring for 50 to 100 coke cars and the Pittsburgh Coal Company for 1200 steel coal cars. Some projects are up for ore boats that if they go through will require a very heavy tonnage. We quote wide and narrow plates at 1.15c. to 1.20c., Pittsburgh, the lower price being for desirable specifications and prompt shipments.

Structural Material.—The American Bridge Company has taken 2200 tons of bridge work for a Western railroad and 6000 to 8000 tons for an Eastern road. Bids will soon be asked on a bridge at McKees Rocks

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requiring 2500 to 3000 tons. We quote beams and channels up to 15 in. at 1.20c., Pittsburgh, but in some cases 1.15c. is being done on desirable specifications.

Bars.—There is not much new buying in either iron or steel bars and specifications against contracts are coming in only fairly well. With steel bars ruling from 1.10c. to 1.15c., it would seem that the bottom of the market has been reached, even with the keen competition that is existing among the mills at present. Consumers are taking in only such quantities of iron bars as are absolutely needed to meet current requirements. We quote steel bars at 1.10c. for very desirable specifications and 1.15c. in small lots, while iron bars are ruling at 1.20c. to 1.25c., f.o.b. Pittsburgh.

Sheets.—New orders and specifications against contracts show a slight falling off, but shipments by the mills are fairly heavy. In spite of the very low prices ruling on black, galvanized and roofing sheets, the trade is buying cautiously for absolute needs, while jobbers are not inclined to increase their stocks at present. Unless there should be further reductions in prices of sheet bars it is not believed that sheets can go much lower, as for some mills that buy their steel, the present prices of sheets are at cost or lower. On the usual run of orders No. 28 black sheets are ruling at 1.90c., but on desirable specifications 1.85c. is being done, while on No. 28 galvanized 2.85c. to 2.90c. represents the market. Several local mills report that they are taking some nice orders for sheets for export.

Tin Plate.—Effective on Monday, October 16, the manufacturers announced a reduction of 20c., or from \$3.60 to \$3.40 per base box, 14 x 20, coke plates. The reduction was not unexpected, but was somewhat heavier than had been looked for. It is simply in line with the lower prices ruling on all other forms of finished iron and steel. Looking back at the most depressed period in the past, on January 6, 1899, the price of tin plate was \$3 per base box, but pig tin was then about 21c. per pound and sheet bars \$17.50 per gross ton. On January 26 of the same year tin plate was advanced 25c. per box and the price steadily rose until August 6, 1899, when 14 x 20 coke plates were selling at \$4.65. It is claimed that with present costs of raw material the price of tin plate is relatively as low as it has been at any time in the last 10 years. There has been little new buying for some time, but it is expected that meat packers and other heavy consumers will shortly commence to place contracts for the first half of next year. The mills as a rule are operating at present to about 60 to 65 per cent. of capacity. We quote 100-lb. cokes, 14 x 20, at \$3.40 per base box, f.o.b. Pittsburgh.

Merchant Steel.—The low prices ruling are stimulating demand to some extent and mills report that more orders have been received so far this month than in the same period in September. Prices continue weak. Quotations, which are more or less shaded, are as follows: Iron finished tire, $\frac{3}{4}$ and $\frac{1}{2}$ in. and heavier, 1.40c.; under these sizes, 1.45c.; planished tire, 1.50c.; channel tire, 1.70c., base; toe calk, 1.80c.; flat sleigh shoe, 1.45c.; concave or convex, 1.60c.; cutter shoe, tapered or bent, 2.15c.; spring steel, 1.85c.; machinery steel, smooth finish, 1.75c.

Hoops and Bands.—Mills report slightly better specifications against contracts on hoops, but the new demand is quiet and only for small lots to cover actual needs. The new demand for bands is also dull and specifications against contracts are unsatisfactory. We quote steel hoops at 1.35c. and bands at 1.15c., extras on the latter as per the steel bar card, but on some recent orders for prompt shipment for both hoops and bands these prices have been shaded \$1 per ton.

Rivets.—The new demand is reported a little better, probably due to the lower prices ruling. We quote structural rivets at 1.50c. to 1.55c. and boiler rivets at 1.60c. to 1.65c., f.o.b. Pittsburgh.

Wire Products.—The new demand for wire and wire nails is only for small lots to meet actual needs, while buyers are specifying against contracts only for such quantities as they must have. The leading wire nail mills continue to bill nails at \$1.70 per keg, but allow customers to deduct 5c. when remitting. We quote wire nails at \$1.65; cut nails, \$1.55; galvanized barb wire, \$1.95; painted, \$1.65; annealed fence wire, \$1.45, and galvanized, \$1.75, all f.o.b. Pittsburgh, usual terms, full freight added to point of delivery.

Spelter.—The market has further advanced and we quote prime grades of Western at 6.15c., East St. Louis,

equal to 6.27½c., Pittsburgh. Still higher prices are predicted.

Shafting.—The new demand is dull and specifications against contracts are not satisfactory. We quote cold rolled shafting at 60 and 5 per cent. off in small lots and 60 and 10 per cent. off list in carload and larger lots, delivered in base territory.

Railroad Spikes.—No contracts are being placed, the railroads buying only such quantities as are needed for repair work. We quote railroad spikes in base sizes at \$1.40 to \$1.45, f.o.b. Pittsburgh.

Merchant Pipe.—Last week the fact was noted that the Texas Company was in the market for 150 miles of 6-in. pipe, and that the business would probably go to the Republic Iron & Steel Company. This has proved to be the case. The order has been so placed and the pipe will be rolled at the Republic Company's tube mills at Youngstown, Ohio. The new demand for merchant pipe is fairly heavy but not quite so large so far this month as in the same period in September. It is stated that the lower discounts adopted two weeks ago are being maintained.

Boiler Tubes.—A fair amount of new business is being placed in locomotive tubes, but new demand for merchant tubes is quiet and is only for small lots to cover actual needs. Jobbers are still carrying as light stocks as possible. We are advised that the new discounts are being fairly well maintained.

Coke.—A better inquiry for both furnace and foundry coke is reported and some fairly large sales have been made. A number of blast furnace companies have been sending out inquiries for coke for the first half or through all of 1912. One is in the market for 5000 tons per month for all of 1912, another for 2500 tons a month for the first half of next year and a Cleveland furnace interest is in the market for 300 tons of coke per day for the remainder of this year. The Bessemer Coke Company is starting this week its Humphries Works at Hecla, Pa., in the Connellsville region, which has 100 ovens and has been shut down for some time. This company is making large shipments of furnace and foundry coke to Canada. As yet there is no betterment in prices, high grade furnace coke for prompt shipment being available at \$1.50 per net ton at oven, and for the remainder of the year at about \$1.55 to \$1.60. A sale of 5000 tons of furnace coke for November and December has been made at \$1.60. Efforts are being made by the operators to more closely regulate the output to the consumption, so that stocks of coke in yards and on cars are less than for some time. We quote 72-hr. foundry coke for prompt shipment at \$1.85 up to \$2 and on contracts from \$2.10 up to \$2.40 per net ton at oven, the higher prices being for makes of foundry coke that have a most excellent reputation among consumers.

Iron and Steel Scrap.—Consumers are refraining from buying, and an embargo now exists on scrap routed for Monessen, Pa., which is making the situation worse. Bids on the Pennsylvania Railroad scrap which closed October 10 were much lower than have been made on the lists of this road for some months. We note sales of 2000 tons of heavy steel scrap at about \$12, 300 tons of cast iron borings at \$8.15 and about 800 tons of machine shop turnings at \$8.60, all delivered in the Pittsburgh district. Prices are as follows per gross ton f.o.b. Pittsburgh, unless otherwise noted:

Heavy steel scrap, Steubenville, Follansbee, Sharon, Monessen and Pittsburgh delivery.	\$12.00 to \$12.25
No. 1 foundry cast.	12.50 to 12.75
No. 2 foundry cast.	12.00 to 12.25
Bundled sheet scrap, f.o.b. consumers' mill, Pittsburgh district	10.25 to 10.50
Rerolling rails, Newark and Cambridge, Ohio, Cumberland, Md., and Franklin, Pa.	13.00 to 13.25
No. 1 railroad malleable stock.	11.75 to 12.00
Grate bars	9.50 to 9.75
Low phosphorus melting stock.	15.50 to 15.75
Iron car axles	22.00 to 22.50
Steel car axles	16.50 to 16.75
Locomotive axles	23.00
No. 1 busheling scrap.	11.50 to 11.75
No. 2 busheling scrap.	8.00 to 8.25
Old car wheels	12.50 to 12.75
Sheet bar crop ends.	13.75 to 14.00
*Cast iron borings	8.25
*Machine shop turnings.	8.75
Old iron rails	14.50 to 14.75
No. 1 wrought scrap.	13.50
Heavy steel axle turnings.	9.75 to 10.00
Stove plate	9.50 to 9.75

*These prices are f.o.b. cars at consumers' mills in the Pittsburgh district.

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Chicago

CHICAGO, ILL., October 17, 1911.

The finished steel tonnage in new business placed on the books as the result of sales in this territory the past week has been small, being limited to miscellaneous buying in lots of a few hundred tons. In a great measure the extremely low prices have been responsible for the orders taken. Specifications have been in somewhat better volume and the recently placed car business has brought to the mills a fair rolling of structural shapes and plates. Prices have reached the lowest levels thus far recorded in this period of depression. The pig iron situation offers little to dispel the general weakness, and the scrap market is experiencing the most unsatisfactory conditions in many years.

Pig Iron.—Indications point very strongly to the selling of local Northern iron under the quotation of \$14.50, f.o.b. furnace, which has been maintained for some time. The open quotation, however, continues unchanged and is offered as the minimum quotation for some of the furnaces. For Southern iron the \$10 basis, Birmingham, for No. 2 prompt shipment continues in force and the business available seems insufficient to warrant any departure from that schedule. The buying for delivery in 1912 continues to be restricted within narrow limits and some uneasiness is being felt by the furnaces because of the continued deferring of such purchases. We quote for Chicago delivery, except for local irons, which are f.o.b. furnace, the following prices on prompt shipments:

Lake Superior charcoal.....	\$16.50 to \$17.00
Northern coke foundry, No. 1.....	15.00 to 15.50
Northern coke foundry, No. 2.....	14.50 to 15.00
Northern coke foundry, No. 3.....	14.25 to 14.50
Northern Scotch, No. 1.....	16.00
Southern coke, No. 1 foundry and No. 1 soft.....	14.85 to 15.10
Southern coke, No. 2 foundry and No. 2 soft.....	14.35 to 14.85
Southern coke, No. 3.....	14.10 to 14.35
Southern coke, No. 4.....	13.85 to 14.10
Southern gray forge.....	13.60 to 13.85
Southern mottled.....	13.60 to 13.85
Malleable Bessemer.....	14.50 to 15.00
Standard Bessemer.....	17.40
Basic.....	15.50
Jackson Co. and Kentucky silvery, 6 per cent.....	17.90
Jackson Co. and Kentucky silvery, 8 per cent.....	18.90
Jackson Co. and Kentucky silvery, 10 per cent.....	19.90

Rails and Track Supplies.—Further buying of cars by Western roads failed to materialize during the week, although the Western car shops which are not busy with new work are repairing a large number of old cars. No rail orders of consequence are reported, and the sale of 4000 tons to the Chesapeake & Ohio, which was given currency in some quarters during the week, has been recognized as a transaction now some weeks old. Reports covering the condition of railroad rolling stock indicate with increasing force the necessity for replacements, but as yet no very general interest in new equipment has been displayed. We quote standard railroad spikes at 1.60c. to 1.70c., base; track bolts with square nuts, 2.05c. to 2.10c., base, all in carload lots, Chicago; standard section Bessemer rails, 1.28c.; open hearth, 1.34c.; light rails, 40 to 45 lb., 1.16c. to 1.20½c.; 30 to 35 lb., 1.19½c. to 1.24c.; 16, 20 and 25 lb., 1.20½c. to 1.25c.; 12 lb., 1.25c. to 1.30½c.; angle bars, 1.50c. to 1.60c., Chicago.

Structural Material.—The week was particularly barren of contracts for fabricated steel, the aggregate placed being 1148 tons, and the only work upon which figures are being taken is the McClurg apartment building, for which 1000 tons will be required. The Worden-Allen Company, Milwaukee, will fabricate 400 tons for a shaft house at the Allouez copper mine, Allouez, Mich. For a Sacramento, Cal., power house, 348 tons will be furnished by the American Bridge Company, and for a Chicago, Milwaukee & St. Paul viaduct the Morava Construction Company, Chicago, will furnish 400 tons. Prices of structural shapes for mill shipment are now pretty generally on the basis of 1.20c., Pittsburgh, or 1.38c., Chicago. The price from store continues at 1.65c.

Plates.—Plate specifications have held up in fairly good tonnage, but new business in this line has shown the same scarcity as that prevailing in other directions. Further concessions in prices are reported, and we quote for Chicago delivery, mill shipment, 1.38c. to 1.43c., and out of store, 1.65c.

Sheets.—A fair volume of sheet business continues to be received, but as in other lines, despite this reasonably good tonnage, strength seems not to be added to the situation. Our quotations represent prices for offerings of average desirability. We quote Chicago prices as follows: Carload lots, from mill, No. 28 black sheets, 2.08c. to 2.13c.; No. 28 galvanized, 3.08c. to

3.13c.; No. 10 blue annealed, 1.63c. Prices from store, Chicago, are: No. 10, 1.95c. to 2c.; No. 12, 2c. to 2.05c.; No. 28 black, 2.40c.; No. 28, galvanized, 3.35c.

Bars.—The week brought out a noticeable increase in the buying of bars and likewise a further unsettling of prices. For prompt shipment specifications, prices equivalent to a 1.10c., Pittsburgh, basis are not uncommon. It is generally accepted that contracts are placed at about \$1 a ton higher. Bar iron business shows little improvement and the mills seem willing to accept bookings on the basis of 1.17½c. We quote as follows, f.o.b. Chicago: Soft steel bars, 1.25c. to 1.33c.; bar iron, 1.17½c. to 1.20c.; hard steel bars rolled from old rails, 1.17½c. to 1.20c. From store, soft steel bars, 1.55c. to 1.60c., Chicago.

Wire Products.—The generally unsettled situation regarding prices in other lines has added difficulty to the sustaining of a firm position regarding wire products. The demand for fencing, both barb wire and woven wire, is a strong feature of this trade. Jobbers' carload prices, which are also quoted to manufacturing buyers, are as follows, per 100 lb.: Plain wire, No. 9 and coarser, base, \$1.68; wire nails, \$1.88; painted barb wire, \$1.88; galvanized, \$2.18; polished staples, \$1.88; galvanized, \$2.18, all Chicago.

Cast Iron Pipe.—At Chicago bids on 500 tons of 8-in. are to be received on the 18th, and at Woodstock, Ill., prices are being asked on 250 tons. The award at Los Angeles, Cal., is still pending. The general demand for pipe has fallen off somewhat, as is customary at this season, but it is expected that an opportunity to buy advantageously will bring out a number of inquiries before the close of the year. We quote as follows, per net ton, Chicago: Water pipe, 4-in., \$26.50; 6 to 12-in., \$24.50; 16-in. and up, \$24, with \$1 extra for gas pipe.

Old Material.—The local market for old material is making a low record for itself and the immediate future holds out little encouragement. Comparatively few sales are being made, although most of the mills are willing to take limited quantities at the minimum prices. The fact that dealers and brokers can move material at this level only at a loss for the most part is restricting trading. The only important railroad offering in scrap consists of 1700 tons of rails by the Baltimore & Ohio Chicago Terminal. On recent lists a number of items submitted by the railroads for prices have been withheld from sale because of the low quotations made. We quote for delivery at buyers' works, Chicago and vicinity, all freight and transfer charges paid, per gross ton, as follows:

Old iron rails.....	\$13.50 to \$14.00
Old steel rails, rerolling.....	12.25 to 12.75
Old steel rails, less than 3 ft.....	11.00 to 11.50
Relaying rails, standard section, subject to inspection.....	24.00
Old car wheels.....	12.50 to 12.75
Heavy melting steel scrap.....	9.75 to 10.00
Frogs, switches and guards, cut apart.....	10.00 to 10.50
Shoveling steel.....	9.50 to 10.00
Steel axle turnings.....	8.50 to 9.00

The following quotations are per net ton:

Iron angles and splice bars.....	\$11.75 to \$12.25
Iron arch bars and transoms.....	13.45 to 13.75
Steel angle bars.....	9.00 to 9.50
Iron car axles.....	17.25 to 17.75
Steel car axles.....	15.50 to 16.00
No. 1 railroad wrought.....	10.25 to 10.75
No. 2 railroad wrought.....	9.25 to 9.75
Steel knuckles and couplers.....	9.50 to 10.00
Steel springs.....	10.00 to 10.50
Locomotive tires, smooth.....	14.00 to 14.50
Machine shop turnings.....	6.00 to 6.50
Cast and mixed borings.....	5.25 to 5.75
No. 1 busheling.....	8.00 to 8.50
No. 2 busheling.....	6.00 to 6.50
No. 1 boilers, cut to sheets and rings.....	7.00 to 7.50
Boiler punchings.....	12.00 to 12.50
No. 1 cast scrap.....	10.00 to 10.50
Stove plate and light cast scrap.....	8.75 to 9.25
Railroad malleable.....	9.75 to 10.25
Agricultural malleable.....	8.75 to 9.25
Pipes and flues.....	7.00 to 7.50

Philadelphia

PHILADELPHIA, PA., October 17, 1911.

Keen competition for plates and shapes for boat building is said to have brought out some sharp cutting in prices. Desirable business in the general line of finished products has been placed at lower figures than recently quoted openly and some buying for stock is reported. The demand for fabricated structural material, however, is less pronounced. Billets are a shade more active, but open hearth rolling billets are now flatly on a \$21.40, delivered, basis. Steel bars are not particularly strong, although iron bars are on a com-

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paratively even basis. The pig iron market has been extremely quiet. Coke is dull, while the old material market is practically at a standstill.

Iron Ore.—Consumers will not use all the ore contracted for this year, and will carry over a considerable amount for delivery in the first quarter of next year. Under the circumstances purchases are confined to small lots to piece out furnace mixtures. Importations during the week included 4720 tons from Sweden and 6200 tons from Cuba. Total importations at this port in September aggregated 95,482 tons.

Pig Iron.—New business generally has been quieter. Consumers are still following the hand-to-mouth policy of making purchases, and as stocks in consumers' yards are usually light the question of prompt delivery is an important one. In some few cases, furnaces are behind in their deliveries on foundry grades, a condition which under ordinary circumstances would mean the blowing in of idle stacks, but under present conditions, with prices unremunerative, the disposition is to defer such action if at all possible. Sales of foundry grades are being made to regular customers, on which deliveries run through the next five and six months, at the present market prices, \$15 to \$15.25, delivered, for No. 2 X foundry iron. No producer in this district, however, is yet willing to name a flat quotation for strictly first quarter shipment. A sale of 1000 tons of coke malleable was, however, sold for second quarter shipment at a price reported to be \$16.55, delivered. Odd lots of low grade iron continue to be taken by cast iron pipe makers, but a difference in views as to prices continues to hold up large transactions. Sales of Virginia foundry irons for prompt and last quarter delivery, in lots up to 100 tons, are made at \$12.25 to \$12.50, furnace, but no sales for strictly 1912 shipment are reported. Definite inquiries for foundry grades for both early and forward shipment have been light. Small lots of rolling mill forge are reported sold at \$14.50, delivered, while negotiations are still pending on the inquiry for several thousand tons reported last week. An inquiry is noted for 6000 tons of basic iron, for shipment in the first quarter of next year, from a central Pennsylvania consumer, while an Eastern melter is again feeling around for a moderate quantity. Small sales of low phosphorus iron are reported, although not for consumption in this immediate vicinity, at equal to \$20, delivered here. The following range of prices is named for shipments ranging from prompt to the next three months, delivered in buyers' yards in this district:

Eastern Pennsylvania No. 2 X foundry....	\$15.00 to \$15.25
Eastern Pennsylvania No. 2 plain.....	14.75 to 15.00
Virginia foundry	15.00 to 15.50
Gray forge	14.25 to 14.50
Basic	14.50
Standard low phosphorus.....	20.00

Ferroalloys.—Inquiries for ferromanganese from consumers in the West are still unclosed, buyers and sellers being apart on the question of prices. The majority of the Eastern sellers maintain the \$38.50, Baltimore, quotation for 80 per cent. ferro, although no business is done at that figure. Fifty per cent. ferro-silicon is comparatively firm at \$62, delivered, but no business is moving in this or the usual 11 to 13 per cent. furnace grade.

Billets.—A trifle better demand for open-hearth rolling billets is reported. Orders are more numerous and consumers are showing more interest in buying for future delivery. Producers are more encouraged with the outlook. Open-hearth rolling billets for this year's shipment are quoted at \$21.40, delivered here, with forging billets at \$26.50 to \$27.50, according to specification.

Plates.—Price concessions have resulted in a somewhat larger volume of business coming to the mills. Orders for several thousand tons of boat plates have been placed and some 14,000 tons is pending for four vessels for which contracts have been placed with Eastern ship builders. Some very low prices have been named for this business and the bulk of the orders have gone to Western mills. Bridge plates have been in pretty active demand and a better run of business in tank and boiler plates is reported. Open quotations for heavy plates, delivered in this territory, range from 1.35c. to 1.45c., the inside price being available for particularly desirable orders.

Structural Material.—Developments in connection with pending propositions, particularly those of any size, as the municipal convention hall, the addition to the Baldwin Locomotive Works erecting shop and a comparatively large apartment house job, are still held up. Fresh inquiries have been less plentiful, although

several buildings are in sight. Railroad bridge orders are not so numerous, although considerable business of this character is pending. Open quotations for plain shapes are lower, 1.35c., delivered here, representing the minimum applying on desirable business, although 1.40c. still rules for small current orders.

Sheets.—About an even volume of business is coming to Eastern mills, which have been again able to average close to full capacity during the week. While there is a little more sizable lot buying, the bulk of the business is in small lots. Prices show little change, Eastern mills readily obtaining a material advance over quotations named by Western mills for delivery in this district.

Bars.—A better volume of business in iron bars is noted, in some instances orders being for larger quantities and for delivery over more extended periods. Mills in this vicinity are fairly well engaged and prices for iron bars range from 1.22c. to 1.27c., delivered here. A moderate business in steel bars is going and, while 1.30c., delivered, is an open quotation, it is reported that even this price has been shaded on desirable specifications.

Coke.—Occasional transactions in foundry coke for early delivery are reported, but there is little snap to the demand. Sales of prompt furnace coke continue to be made at \$1.50 at oven, with \$1.60 asked for deliveries during the remainder of the year and \$1.75 to \$1.85 quoted for first quarter shipment. The following range of prices, per net ton, is named for early deliveries in buyers' yards in this district.

Connellsville furnace coke	\$3.70 to \$3.90
Foundry coke	4.25 to 4.60
Mountain furnace coke	3.30 to 3.50
Foundry coke	3.85 to 4.20

Old Material.—The market has been extremely quiet. Railroad lists closed recently went at prices close to current quotations. The largest quantities evidently went to consumers, although small lots were distributed among other bidders, who paid from \$12.15 to \$12.25 for heavy melting steel. It is understood that No. 1 wrought scrap on railroad lists did not, in instances, bring over \$13.75. There has not been enough business moving in any grade to establish quotations. Sellers make few offers under present conditions and unless forced to sell aim to hold what stocks they have, awaiting better conditions. The following range about represents quotations at which the ordinary current business for prompt shipment can be done, delivery in buyers' yards, eastern Pennsylvania and nearby points, taking a freight rate from Philadelphia varying from 35c. to \$1.35 per gross ton, for shipment ranging from prompt to the remainder of the year:

No. 1 heavy melting steel scrap.....	\$12.00 to \$12.25
Old steel rails, rerolling (nominal).....	13.00 to 13.50
Low phosphorus heavy melting steel scrap..	16.25 to 16.75
Old steel axles (nominal).....	18.00 to 18.50
Old iron axles (nominal).....	23.50 to 24.00
Old iron rails (nominal).....	16.50 to 17.00
Old car wheels	11.75 to 12.00
No. 1 railroad wrought.....	14.00 to 14.25
Wrought iron pipe.....	11.50 to 11.75
No. 1 forge fire.....	10.00 to 10.50
No. 2 light iron (nominal).....	6.00 to 6.50
Wrought turnings	8.00 to 8.25
Cast borings	7.50 to 7.75
Machinery cast	12.50 to 13.00
Railroad malleable (nominal).....	11.00 to 11.50
Grate bars, railroad.....	9.25 to 9.75
Stove plate	9.25 to 9.75

Cincinnati

CINCINNATI, OHIO, October 18, 1911.—(By Telegraph.)

Pig Iron.—The largest inquiry before the trade here is for 1200 tons each of Northern and Southern foundry iron to be shipped to a central Indiana consumer during the first half of next year. There is a fair run of inquiries for small tonnages that are well scattered. Business booked is usually confined to carloads, although two sales of No. 2 Northern foundry totaling 500 tons were closed last week at \$13, Ironton, for this year's delivery. A few 100-ton lots of No. 2 Southern foundry were also taken by nearby melters at \$10, Birmingham, mostly for prompt shipment. A number of Southern furnaces are willing to take on first quarter business at \$10, and it is also rumored that several producers in the Hanging Rock district have solicited orders from old customers at \$13, Ironton, for the same delivery. The absence of speculative buying and the excellent shipments now being made on old contracts are considered two encouraging features that in a

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measure offset the pessimistic feeling engendered by the low prices now prevailing. Malleable is unchanged at \$13.25, Ironton, but very little demand for it is reported. A local firm is asking for 500 tons of ferromanganese for shipment over the next six months. It is rumored that local agencies will soon be working on a large inquiry for basic, but no definite information is yet available as to the tonnage or delivery wanted. Based on freight rates of \$3.25 from Birmingham and \$1.20 from Ironton, we quote, f.o.b. Cincinnati, as follows, for prompt shipment:

Southern coke, No. 1 foundry and 1 soft..	\$14.00 to \$14.25
Southern coke, No. 2 foundry and 2 soft..	13.25 to 13.75
Southern coke, No. 3 foundry.....	12.75 to 13.25
Southern coke, No. 4 foundry.....	12.50 to 13.00
Southern gray forge	12.50 to 13.00
Ohio silvery, 8 per cent. silicon.....	16.95 to 17.20
Lake Superior coke, No. 1.....	14.70 to 14.95
Lake Superior coke, No. 2.....	14.20 to 14.45
Lake Superior coke, No. 3.....	13.70 to 13.95
Basic, Northern	14.20 to 14.45
Standard Southern car wheel.....	25.50 to 25.75
Lake Superior car wheel.....	19.00

(By Mail.)

Coke.—Prices continue firm on both foundry and furnace grades, although the spurt of activity reported last week in the foundry coke demand has eased off and there is now practically no new inquiry. Shipments on contracts continue moving satisfactorily. Connellsville 48-hr. coke is selling around \$1.50 to \$1.55 per net ton at oven for nearby shipment, but in the Wise County and Pocahontas districts the asking price ranges from \$1.60 to \$1.70 for prompt movement. Contract business in all three fields brings out quotations from 10c. to 20c. above the foregoing prices. Foundry coke is quoted in the different districts all the way from \$1.85 to \$2 for prompt shipment and between \$2.10 and \$2.25 for future delivery.

Finished Material.—It is reported that the small order business for steel bars is better than dealers themselves realize, and structural shapes are also in fair demand. The Pittsburgh mill price on steel bars is 1.15c. and the local warehouse quotation is around 1.60c. Beams and channels, cut to lengths if desired, are being sold on a basis of 1.70c., Cincinnati warehouse delivery. Hoops and bands are very quiet.

Old Material.—It is hard to size up the present situation, although it cannot be denied that a further weakening in prices is threatened. It is reported that several railroad systems have unloaded a large tonnage of scrap lately, and it is quite probable that our maximum buyers' prices quoted below would about represent the minimum sellers' quotations obtainable. The approximate prices paid by buyers, delivered in their yards in southern Ohio and Cincinnati, are as follows:

No. 1 railroad wrought, net ton.....	\$10.00 to \$10.50
Casting borings, net ton.....	4.50 to 5.00
Steel turnings, net ton.....	5.50 to 6.00
No. 1 cast scrap, net ton.....	9.25 to 9.75
Burnt scrap, net ton.....	6.25 to 6.75
Old iron axles, net ton.....	16.25 to 16.75
Bundled sheet scrap, gross ton.....	7.25 to 8.25
Old iron rails, gross ton.....	13.25 to 13.75
Relaying rails, 50 lb. and up, gross ton.....	20.75 to 21.50
Old car wheels, gross ton.....	10.00 to 10.50
Heavy melting steel scrap, gross ton.....	9.75 to 10.25

Cleveland

CLEVELAND, OHIO, October 17, 1911.

Iron Ore.—Shipments are decreasing and very little wild vessel room will be required from now on. The October movement will show considerable falling off from that of a year ago. No sales or inquiries are reported. Ore firms do not expect any further sales this season, except possibly a few small lots. We quote prices as follows: Old range Bessemer, \$4.50; Mesaba Bessemer, \$4.25; old range non-Bessemer, \$3.70; Mesaba non-Bessemer, \$3.50.

Pig Iron.—A Cleveland interest has sold 1500 tons of Bessemer iron to a Pittsburgh consumer at \$14.50, Valley furnace, for delivery through the first quarter of next year. Bessemer iron is being quite generally quoted at \$14.50 and basic at \$12.50, Valley furnace, but these prices have brought out no additional sales or inquiries. The foundry iron market is dull, the business reported being in small lots. The only local inquiry of any size is from a Cleveland manufacturer for 1000 tons of No. 2 foundry for the last quarter and first quarter delivery. A western Michigan stove manufacturer is reported in the market for a large amount of foundry iron. Foundries in this territory are nearly all under contract for their requirements for this year and

are taking no interest in the market for delivery after January 1, although some contracts have been placed for the first quarter. Foundries have not bought in excess of their requirements and stocks are generally low. Some Southern foundry iron is being sold in small lots for the last quarter delivery at \$10 to \$10.25, Birmingham. Competition in Ohio silvery iron is keen and has resulted in lower prices. In some cases \$15.50, at furnace, is being shaded for 8 per cent. silicon. For Cleveland delivery we quote as follows for prompt shipment and for the last quarter:

Bessemer	\$15.40
Basic	13.40
Northern foundry, No. 2.....	13.75
Gray forge	13.00
Southern foundry, No. 2.....	\$14.35 to 14.60
Jackson County silvery, 8 per cent. silicon.....	17.05

Coke.—The market is quiet. Prices are stationary and firm. The only sales reported are small lots of foundry coke. We quote standard Connellsville furnace coke at \$1.50 to \$1.55 per net ton, at oven, for prompt shipment and \$1.60 to \$1.70 for contract. Connellsville 72-hr. foundry coke is held at \$1.85 to \$2.15 for prompt shipment and \$2.10 to \$2.40 for contract.

Finished Iron and Steel.—While the demand in finished lines is somewhat more active than before the recent cuts, lower prices are bringing out only a moderate volume of business. Mills are getting a good volume of orders, but they are nearly all for small tonnages. It seems still to be the policy of nearly all consumers to buy only in small lots for their immediate requirements. The price situation appears somewhat more settled. Sellers are not inclined to shade recent low quotations, but some appear willing to take bottom prices for smaller lots than they would book at these levels a week or two ago. Steel bars are selling at 1.10c. to 1.15c., Pittsburgh, and efforts of buyers to secure a price lower than 1.10c. appear to be generally unsuccessful. Structural material is sold at 1.20c. to 1.25c., the former price being only for the most desirable orders. The same quotations are being made on plates, but they are not so firm and there are reports of shading of 1.20c. While mills are not eager to take on tonnage for delivery after the first of the year some steel bar contracts at 1.15c. and plate and shape contracts at 1.25c. have been taken in the local market for delivery through the first quarter. The structural market is quiet. Low prices on steel do not as yet appear to have stimulated building activity. The demand for sheets is moderate and prices are fairly firm. While some concessions are reported some of the mills are declining to shade the regular quotations of 1.90c. for No. 28 black and 2.90c. for No. 28 galvanized. The demand for iron bars is not active. Prices are firm at 1.20c., Cleveland mill. The Empire rolling mill, which has been idle for two weeks, started up this week.

Old Material.—The market is very dull and prices on some grades show a further decline. There is practically no inquiry from the mills, although some will take on small lots that are offered at very low prices. A local mill has contracted for 500 tons of heavy steel scrap at \$11. Dealers are unwilling to sell stocks at present, as they cannot do so without taking a loss. Producers are also generally holding their accumulations of scrap for a better market. Mills are taking a moderate volume of material on contracts. Dealers' prices, per gross ton, f.o.b. Cleveland, are as follows:

Old steel rails, rerolling.....	\$12.25 to \$12.50
Old iron rails.....	14.00 to 14.50
Steel car axles	17.00 to 17.50
Heavy melting steel.....	10.75 to 11.00
Old car wheels.....	11.25 to 11.50
Relaying rails, 50 lb. and over.....	22.50 to 23.50
Agricultural malleable	10.50 to 11.00
Railroad malleable	11.00 to 11.25
Light bundled sheet scrap.....	9.50 to 10.00

The following prices are per net ton, f.o.b. Cleveland:

Iron car axles.....	\$18.50 to \$19.00
Cast borings	6.00 to 6.25
Iron and steel turnings and drillings.....	6.50 to 7.00
Steel axle turnings.....	7.50 to 8.00
No. 1 busheling	9.00 to 9.50
No. 1 railroad wrought.....	11.25 to 11.75
No. 1 cast	11.00 to 11.50
Stove plate	9.00 to 9.25
Bundled tin scrap.....	11.00 to 11.50

Birmingham

BIRMINGHAM, ALA., October 16, 1911.

Pig Iron.—One producing interest reports the sale of an aggregate of 4500 tons in the past week; another reports 1750 tons, with 850 tons and 700 tons respectively as the aggregate sold by two other concerns. This tonnage does not include any part of the

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large order understood to have been placed with Southern producers by the leading pipe interest through Eastern offices, but, with the exception of one lot of 1000 tons for Northern consumption, consists of lots of 500 to 750 tons each, of which 600 tons only is for delivery in the first quarter. Prices recently received vary from a basis of \$10 to \$10.50, Birmingham. The higher price named was obtained for first quarter shipments and for carload lots for prompt delivery. A lot of 1000 tons for prompt shipment was sold at \$10, Birmingham, but the majority of sales effected involved a basis 25c. per ton higher, which is the price being adhered to by the majority of producers for deliveries during the remainder of the year into strictly Southern territory. The schedule of \$10.50, Birmingham, for delivery in the first quarter of next year has been adopted by one producing interest only so far; however, such figures are no doubt acceptable to the majority of producers. More interest is being manifested in advanced deliveries by the trade, although a comparatively small tonnage for such requirement is now being considered in definite form. An inquiry recently made in this market for 3000 tons of mill iron for shipment extending into the first quarter has not resulted in a sale. It is understood that in this particular case the lowest figures quoted were \$9.25 for gray forge and \$9 for mottled, while the price offered for those grades was \$9 and \$8.50 respectively. A lot of 100 tons of high silicon iron has just been sold at \$11, Birmingham, and several inquiries for small lots of silvery gray are pending. This last grade, as well as the low grades, or mill iron, continues very scarce.

Cast Iron Pipe.—Approximately 1700 tons of water pipe has just been placed with Southern producers for requirement at Long Beach, Cal., and some addition has been made to a contract placed for requirement at Kansas City, Mo. The city of Lexington, Miss., will award some 1000 tons of water pipe during this week, which is the largest single tonnage actually in sight for early placing. Notwithstanding adverse conditions, the price for both water and gas pipe is being fully maintained as far as the Southern producing interests are concerned. The concessions that have been made by the Northern and Eastern producers have not affected the prices asked by local concerns, which is accounted for by the tonnage now on order books. It is pointed out that the local production has so far this year been short the output of two large plants, while the business placed that has of necessity come to Southern plants is practically equal to that placed when all plants were in operation. The local pipe interests have not figured largely in the pig iron market for some months, but such conditions are due to previous purchases rather than to a smaller consumption at the plants in operation. Producers' asking prices for water pipe are as follows, per net ton, f.o.b. cars here: 4 to 6-in., \$23; 8 to 12-in., \$22; over 12-in., average, \$21, with \$1 per ton extra for gas pipe.

Old Material.—The demand is still very scattering and prices received are considerably at variance. Sales of the past week involved light cast and stove plate, with small lots of wrought and steel grades. We quote as follows, per gross ton, f.o.b. cars here:

Old iron axles (light).....	\$12.50 to \$13.00
Old steel axles (light).....	11.50 to 12.00
Old iron rails.....	11.50 to 12.00
No. 1 railroad wrought.....	10.00 to 10.50
No. 2 railroad wrought.....	8.50 to 9.00
No. 1 country wrought.....	6.50 to 7.00
No. 2 country wrought.....	6.00 to 6.50
No. 1 machinery, cast.....	8.50 to 9.00
No. 1 steel.....	8.00 to 8.50
Tram car wheels.....	7.50 to 8.00
Standard car wheels.....	9.00 to 9.50
Light cast and stove plates.....	6.00 to 6.50

St. Louis

ST. LOUIS, MO., October 16, 1911.

The market is unreservedly in the doldrums. Conditions have apparently settled down to the hand-to-mouth principle for some time to come. Pig iron, coke, finished iron and steel and even old material are going at prices which the sellers are unwilling to quote, and buyers keep them a secret in the hope of pushing them farther down next time.

Pig Iron.—A sale of 600 tons of foundry and an inquiry for 600 tons of soft from another source constitute the chief items of the week. The former consisted of 500 tons of No. 2 Southern and 100 tons of No. 4. It is pretty well settled that the No. 2 went at \$9.75, Birmingham. The delivery is for November and

December. The inquiry noted is for first quarter. No. 4 is almost out of the market here and is commanding within 50c. of No. 2 price.

Coke.—The smelter sale of 3000 tons of 48-hr. coke reported last week has swelled to 6000 tons, and the price is said to have been above the market, due to special conditions. Most of the business now is in carload orders for prompt shipment. The quotations nominally stand now at \$1.50 at oven for 48-hr. coke, \$1.90 to \$2.15 for prompt shipment 72-hr. Connellsville and Stonega, and \$2.10 to \$2.25 for first quarter delivery.

Finished Iron and Steel.—Practically all the business moving is for prompt shipment, but an interesting feature is the fact that collections are good and discount customers are taking their discounts regularly without urging. In structural steel very little is being taken for stock, despite the attractive prices that are available. There is, however, a fair business in small orders, running into an interesting total. An example of the insistence of the buyers is shown in an order placed to-day, on which the conditions were for shipment Wednesday of this week. In standard rails the inquiries are few, and for small quantities not enough to have any bearing on the market. Light rails are in increased request, due to the growing activity of the coal mines. Track fastenings have been in only fair demand. Bars show little movement and the same is true of plates, in spite of the fact that prices are practically at buyers' disposition.

Old Material.—Conditions in the scrap market are such as to leave the dealers with little hope for the immediate future and practically nothing by which to get a line on possibilities. There continues to be some buying to apply on contracts and a little to hold against better prices, if they come. No new lists came out during the week and in the present state of the market those which have been expected may be withheld. Dealers' prices, per gross ton, f.o.b. St. Louis, are as follows:

Old iron rails.....	\$12.00 to \$12.50
Old steel rails, rerolling.....	11.50 to 12.00
Old steel rails, less than 3 ft.....	10.50 to 11.00
Relaying rails, standard section, subject to inspection.....	22.50 to 23.00
Old car wheels.....	12.00 to 12.50
Heavy melting steel scrap.....	10.50 to 11.00
Frogs, switches and guards cut apart.....	10.50 to 11.00

The following prices are per net ton:

Iron fish plates.....	\$10.50 to \$11.00
Iron car axles.....	18.00 to 18.50
Steel car axles.....	16.00 to 16.50
No. 1 railroad wrought.....	10.25 to 10.75
No. 2 railroad wrought.....	9.25 to 9.75
Railroad springs.....	9.25 to 9.75
Locomotive tires, smooth.....	13.00 to 13.50
No. 1 dealers' forge.....	7.00 to 7.50
Mixed borings.....	5.00 to 5.50
No. 1 busheling.....	8.50 to 9.00
No. 1 boilers cut to sheets and rings.....	7.00 to 7.50
No. 1 cast scrap.....	8.50 to 9.00
Stove plate and light cast scrap.....	7.00 to 7.50
Railroad malleable.....	7.50 to 8.00
Agricultural malleable.....	6.50 to 7.00
Pipes and flues.....	7.50 to 8.00
Railroad sheet and tank scrap.....	7.00 to 7.50
Railroad grate bars.....	6.50 to 7.00
Machine shop turnings.....	6.50 to 7.00

San Francisco

SAN FRANCISCO, CAL., October 10, 1911.

The movement of finished products continues on about the same limited scale as last month. While the local trade does not anticipate any further reduction of values in the primary markets, the recent decline has failed to bring out any active buying interest. Although some of the larger merchants are keeping their stocks in good shape others are letting their supplies run low, and speculative buying is entirely lacking. Judging by the present attitude of buyers it is not likely that any number of contracts for extended delivery will be placed until there is some indication of an advance at the mills. Some apprehension still exists in the jobbing trade regarding the action of the United States Steel Products Company, though recent private advices concerning conditions in Eastern distributive markets are of a reassuring nature. Local resale prices on merchant pipe have been reduced, but values in other lines show little change.

Bars.—The larger consumers of soft steel bars continue to buy in a small way for immediate needs only, and while the aggregate movement from store is slightly larger than a month or two ago the tonnage is below the average for this time of year. The reduction of mill prices has had no perceptible effect

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on the volume of orders. Merchants are buying according to current needs, but appear unwilling to make any provision for the future. No very large orders for reinforcing material have come out of late, but the total tonnage is fair, and numerous small inquiries are coming up. Bars from store, San Francisco, are quoted at 2c. for steel and 1.90c. for iron. Even at the reduced mill quotations these figures leave little room for profit to the jobber.

Structural Material.—Notwithstanding some encouraging features in the outlook, actual business continues rather slow, the letting of large contracts being delayed for various reasons. The valuation of building permits last month was \$1,634,048, a decrease of about \$600,000 from the August record, though the valuation for September, 1910, was still lower. Building is quiet at Portland, Ore., but Los Angeles has taken a very fair tonnage of late, and several new inquiries are about due. The principal contract closed here is the German House Association building, requiring between 800 and 900 tons, which went to the Western Iron Works. A few small country bridge jobs have been placed, and a small contract has been let on the Westinghouse Air Brake Company's warehouse in Oakland, though the greater part of this building will be of reinforced concrete. Plans for the Polytechnic High School will be out in about two weeks and bids on the Los Angeles Times building will be received October 12. Figures are being received on the Failing building at Portland, Ore., about 200 tons. Nothing further has been heard of the St. Francis Hotel addition or the Standard Oil building, though the latter is pretty certain to be let during the fall. Plans are nearly complete for the Sharon estate building at New Montgomery and Jessie streets, but it is not certain that the job will be carried out.

Rails.—Light rails remain dull, but orders for standard sections are coming out in fairly good shape. Most individual inquiries are for small or moderate lots, but quite a number of the interurban lines of California are coming into the market and continued activity is expected for the remainder of the month. Orders are also coming out freely for grooved rails. Construction has been authorized on the Clear Lake Railroad of Lake County, Cal. It is announced that work will be rushed on the Southern Pacific extension from Eugene, Ore., to Coos Bay. Surveys are being made for a new branch in the oil field district.

Sheets.—The movement in a small jobbing way is about up to that of last month, but there is little buying except for actual needs. Most of the jobbers are keeping out of the market and show no disposition to take on any surplus until more firmness is exhibited in the East.

Plates.—Interest in ship plates has fallen off for the present, and the decline in prices appears to have checked the demand for tank plates, though actual requirements are smaller than a few months ago. A good many small tanks are being ordered for waterworks projects through the country, but there is no heavy demand from the oil fields. Independent oil interests have formed a storage plan which may lead to considerable business.

Merchant Pipe.—The reduction of prices by manufacturers was followed immediately by a corresponding drop in local jobbing prices. The tonnage booked by manufacturers' agents is less than last month. Merchants report no demand of any consequence and are themselves buying practically nothing. Some additional stock may be taken on later in the month, but there is no disposition to place contracts for extended delivery. Business in the oil fields is also about at a standstill, as the production of oil is in excess of transportation facilities, and capital appears to be lacking for the construction of new pipe lines. Bids were received October 9 by H. Floyd, Victoria, B. C., for 24 miles of steel pipe, 4 to 12 in.

Cast Iron Pipe.—There has been considerable delay in the laying of pipe for the San Francisco auxiliary system, 4000 tons of this material being still in the yards of the United States Cast Iron Pipe & Foundry Company awaiting delivery. The present movement along the coast is satisfactory, though the principal tonnage for some time has been for southern California. The 8000 tons for San Diego is being shipped in trainloads of 1000 tons. The Los Angeles order for 620 tons was placed with the Glamorgan Pipe Company. The United States Pipe Company has taken a small order for Hollywood, Cal. The town of Dorris, Cal., is taking bids on a lot of waterworks supplies, and Orland and Watsonville, Cal., will be in the market shortly for a lot of pipe. The town of Oxnard, Cal.,

is figuring on a water system to cost about \$150,000, and will be in the market in about three months. There is a good sized inquiry from Honolulu, T. H., for which no order has been placed.

Pig Iron.—The general foundry trade remains extremely quiet. Some local steel interests have recently placed contracts with Chinese furnaces for a heavy tonnage for extended delivery at prices amounting to about \$18 in this harbor, but ordinary shipments are quoted at \$20 to \$24 for foundry grades of Chinese, English or Continental iron. The ship Irby has just arrived with 700 tons of English iron, besides a lot of coke and fire brick. No. 2 Southern foundry iron for delivery at San Francisco is quotable at \$20.50 to \$21, but is not moving in any quantity.

Old Material.—Conditions show little change, aside from a feeling of weakness in all lines. There is some movement in steel melting scrap, but only in a small way, and the movement of the surplus to the East will probably commence shortly. Cast iron scrap is almost entirely neglected. Re-rolling rails are still being delivered on old contracts. Prices are quoted as follows: Cast iron scrap, per net ton, \$16; steel melting scrap, per gross ton, \$10.50 to \$11; wrought scrap, per net ton, \$11 to \$15; re-rolling rails, per net ton, \$11.

The Pacific Hardware & Steel Company, San Francisco, has loaded the ship Edward Sewall, 5500 tons, with a full cargo for this port, including wire products, plates, sheets and pipe. The vessel was dispatched from Philadelphia for the voyage via Cape Horn, October 4. This is the first time that a local hardware house has taken an entire cargo of steel products from the Atlantic coast.

Local merchants are greatly concerned over the possibility of a general advance in westbound rail rates, which is expected to occur November 15. The effect of this advance would be to divert almost the entire tonnage of steel for this territory to the sea route. The tonnage via Panama and Tehuantepec has been steadily increasing for some time, and shipments are now brought by sea almost as quickly as by rail. The change would operate greatly to the disadvantage of inland plants and may cut off the coast market almost entirely from some manufacturers.

Buffalo

BUFFALO, N. Y., October 17, 1911.

Pig Iron.—The market is quiet. Apparently there are not many consumers who have not covered their present and immediate future requirements, and inquiry is slack. Little of the recent pipe works purchasing came to this district. Such orders as have been placed have covered principally the general run of foundry grades in small amounts and at prices substantially the same as reported last week. Shipments on contracts to cover fourth quarter requirements of melters continue heavy. Quotations show quite a wide range, determined according to the specifications of the purchaser and the furnace necessities as regards being sold up on grades specified. So far as ascertained, no premium is now being asked for the first quarter of 1912 over the present quarter. The quotations below approximate the situation as closely as possible for the present quarter and delivery extending over the first quarter and possibly the first half of 1912, f.o.b. Buffalo:

No. 1 X foundry.....	\$13.75 to \$14.00
No. 2 X foundry.....	13.25 to 13.75
No. 2 plain.....	13.00 to 13.50
No. 3 foundry.....	13.00 to 13.25
Gray forge.....	13.00
Malleable.....	13.75 to 14.25
Basic.....	13.75 to 14.25
Charcoal.....	16.50 to 17.25

Finished Iron and Steel.—The lower prices have brought out considerably increased tonnages of new business in bars, plates and shapes, particularly for bar material, more orders having been placed than for some weeks. The price at which the larger proportion of the bar business was taken was 1.15c., Pittsburgh, for carload lots and 1.20c. for less than carload lots. In a few instances covering large tonnages it is reported that 1.15c. has been shaded slightly. Fence wire and wire nails are steady at \$1.65, nail base, for carload lots to jobbers. Considerable Canadian export business in barb wire, fence wire, etc., is noted, including two orders of 100 tons each. Shipping specifications on bar contracts for the remainder of the year are heavy in volume. In fabricated structural lines the situation shows improvement over last week. The feeling is bet-

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ter and consumers are evidently becoming convinced that now is a good time to buy. Henry Schenck & Son, Erie, Pa., have received the general contract for the Lawrence Hotel and the Hamot Hospital nurses' home in that city, the former requiring about 900 tons and the latter about 200 tons of steel. The Charles F. Ernst Sons Iron Works, Buffalo, has received the contract for the steel for the Casino building to be built by the city of Buffalo in Cazenovia Park, about 100 tons. Driscoll Bros., Ithaca, were low bidders for the Prudence Risley Hall, Cornell University, taking about 200 tons, but plans may be revised and new bids called for. Plans are being prepared for a six-story annex to the J. N. Adams Company's department store, Buffalo, requiring 450 tons, and for a seven-story department store at Rochester for E. W. Edwards & Son, requiring 800 tons.

Old Material.—An exceedingly limited demand is experienced for any line. Consumers are taking material on contract even less freely than last week, at which time such shipments were quite light. Users' requirements for the remainder of the year are evidently well supplied. There are no indications of a revival of demand, but prices are unchanged, dealers preferring to hold their stocks rather than to lower the present schedule. We quote as follows, per gross ton, f.o.b. Buffalo:

Heavy melting steel.....	\$12.50 to \$13.00
Low phosphorus steel.....	16.00 to 16.50
No. 1 railroad wrought.....	14.00 to 14.50
No. 1 railroad and machinery cast scrap.....	13.50 to 14.00
Old steel axles.....	18.50 to 19.00
Old iron axles.....	22.00 to 22.50
Old car wheels.....	13.00 to 13.50
Railroad malleable.....	12.75 to 13.00
Boiler plate.....	12.50 to 13.00
Locomotive grate bars.....	11.00 to 11.50
Pipe.....	9.25 to 9.50
Wrought iron and cast steel turnings.....	7.15 to 7.40
Clean cast borings.....	7.00 to 7.25

Boston

BOSTON, MASS., October 17, 1911.

Old Material.—Prices have not changed in the week. The market is featureless and dull. The prices quoted below are those offered by the large dealers to the producers and to the smaller dealers and collectors, per gross ton, carload lots, f.o.b. Boston, and other New England points, taking Boston rates from eastern Pennsylvania points. In comparison with Philadelphia prices the differential for freight of \$2.30 a ton is included. Mill prices are approximately 50 cents a ton more than dealers' prices.

Heavy melting steel.....	\$9.50 to \$10.00
Low phosphorus steel.....	11.45 to 11.95
Old steel axles.....	14.00 to 14.50
Old iron axles.....	17.00 to 18.00
Mixed shafting.....	12.75 to 13.25
No. 1 wrought and soft steel.....	11.00 to 11.25
Wrought iron pipe.....	8.75 to 9.00
Skeleton (bundled).....	7.00 to 7.50
Cotton ties.....	7.00 to 7.50
No. 2 light.....	4.50 to 5.00
Wrought turnings.....	5.00 to 5.50
Cast borings.....	4.50 to 5.00
Machinery, cast.....	12.50 to 13.00
Malleable.....	9.25 to 9.75
Grate bars.....	6.00 to 6.50
Stove plate.....	8.00 to 8.50

The German Iron Market

BERLIN, October 5, 1911.

Conditions in the iron market are improving. The works are having an unusually heavy run of orders. According to some of the trade reports they have never been busier than now, and most of them are demanding six to eight weeks for filling new orders. The foreign market continues to call for large quantities of steel, and the outbreak of the war in the Mediterranean appears to have had no effect in restricting the foreign demand. The prices on foreign orders are firm, and improvements have been reported in some cases; but home prices show less strength than those for export.

Pig iron continues to be turned out at about the previous rate, and consumers are regularly taking shipments on contracts. The market, however, shows the same waiting tendency previously reported. It now appears that the new syndicate has good grounds for its repeated postponements in giving out its price list; it has not yet reached an understanding with a group of dealers, and there appear also to be some troubles

still inside the new organization. According to later information the Luxemburg-Lorraine furnaces joined the syndicate in a rather experimental sort of way till the end of 1912, whereas the other furnaces went in for four years; hence it is possible that this southwestern group may give notice of quitting before a year has elapsed. Meanwhile the furnaces are demanding somewhat higher prices for supplementary orders of iron for this year delivery.

In semimanufactured steel products business continues very good. The usual monthly report given out by the Union several days ago says that the amounts contracted for during September warrant the conclusion that consuming works are well employed; also that calls for delivery on foreign orders have continued satisfactory, and that business with England has improved. In heavy steel rails business continues very good, says the Union, and further large orders have been taken. Grooved rails are quieter, corresponding to the season, but some good home and foreign orders are about to be placed. Rails for mines are also quieter. Sales of structural shapes for the last quarter of the year have been made in satisfactory quantities, and specifications have been coming in at a brisk pace.

Bars are more active, and prices are firm. Many of the mills have an unusually large supply of orders on hand, and some of them are stipulating six to eight weeks to deliver on new orders. Home business for the quarter has mostly been contracted for, and few new orders are coming out; but foreign business is quite active. The bottom prices for home delivery are now about 103 to 105 marks, while some establishments demand still more. Bars of open hearth steel command as high as 110 marks. It is reported that the mills show no disposition to take orders for next year's delivery at these prices. Prices for bars for export have risen to 97.50-100 marks in sympathy with recent advances in Belgium. The Union last week rejected the application for an increase of allotments in bars; and this occurred also in respect to plates, wire rods and tubes.

The market for plates of all qualities, but particularly for the heaviest grades, continues very active, and this tendency is further stimulated by a strong foreign demand. Ship plates are in such heavy demand that some foreign orders with short periods of delivery had to be rejected. German shipyards are offering so many orders that it is difficult to place them. The demand for plates by construction shops is also very heavy, but boiler plates are not in quite such heavy demand as the foregoing. The demand for plates of medium thicknesses has increased, and mills have much work to do.

Band steel has improved within the past few weeks, although the price situation is unfavorably influenced by the competition of several south German works. The mills have mostly sold out their output to the end of the year. The foreign demand is quite good, but prices for export are very low owing to English and Belgian competition. English competition is also felt in cold-rolled bands, in which a rather quiet tone prevails.

Wire rods are rather more active. The requirements of consumers have been about provided for till the end of the year. The demand for wire and wire nails, both from the home and the foreign trade, has become considerably more active; but prices are very unsatisfactory. Another unsatisfactory section of the trade is that of pipes, for which prices also remain much too low to suit makers; but considerable ordering is reported.

Some further company reports have been issued this week. The Deutsch-Luxemburg Company, now one of the biggest concerns of the country since it annexed the old Dortmund Union last year and advanced its capital to 100,000,000 marks—again distributes 11 per cent., but this is on 90,000,000 marks, against 55,000,000 marks last year. The gross profits amounted to 19,955,000 marks, against 13,807,000 marks last year. The Laurahütte of the Silesian district also leaves its dividend unchanged—at 4 per cent.—but it, too, had larger earnings, namely, 6,747,000 marks, against 5,345,000 marks last year. Finally, the Düsseldorf Eisen und Draht-Industrie, one of the leading wire producers of the country, distributes only 8 per cent., as compared with 10 per cent. last year.

The Robeson Iron Company, Ltd., Robeson, Pa., has started up its blast furnace, the torch having been applied on the evening of October 12, and it is now running nicely. S. B. Patterson is superintendent.

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New York

NEW YORK, October 18, 1911.

Pig Iron.—Inquiry for pig iron in the New York district has increased in the past week and several lots of 500 to 1000 tons of foundry iron are under negotiation, in addition to one of 500 tons of malleable pig iron for Newark, N. J. Several other New Jersey concerns are in the market, including one prominent manufacturer of stove plate castings which bought a round lot two or three weeks ago. A number of inquiries have come from New England foundries and for this business there is keen competition between furnaces at Buffalo and Virginia furnaces, in case the buyer is located so as to receive shipments entirely by water. Virginia sellers are still quoting \$12.25 at furnace for No. 2X iron. Transactions in Eastern Pennsylvania indicate that some Lehigh and Schuylkill valley furnaces are selling quite a little below \$14.50 at furnace for No. 2 iron. Sales have been made below the basis of \$15 at Jersey City for No. 2X, while certain Buffalo furnaces are selling at \$13.25 for delivery over the remainder of this year, and in some cases through the first quarter of 1912. Most of the business of the past week and that now under negotiation is for the first quarter of next year, and buyers have no difficulty in getting bids on the same basis as for deliveries in November and December. In spite of an improved statistical position the recent yielding of prices on steelmaking pig iron in the Central West has had an unfavorable effect on the general market. The low prices named in some foundry iron sales are not made by all furnaces, and some of the figures reported are found to apply to iron of lower silicon than strictly No. 2X. Recent purchases of pipe iron are now said to have aggregated less than was at first reported, though there was a general acceptance of offers of odd lots of low grades coming from a considerable number of Northern and Southern furnaces. Our quotations are as follows for Northern iron at tidewater: No. 1 foundry, \$15.25 to \$15.50; No. 2X, \$15 to \$15.25; No. 2 plain, \$14.50 to \$14.75. For Southern iron we quote \$15 to \$15.25 for No. 1 foundry and \$14.50 to \$14.75 for No. 2 foundry.

Finished Iron and Steel.—The low level of prices does not seem to have attracted additional business in structural material, and the attitude is that buyers have been made overcautious and slow to settle projects because there has been so much advertising in the local market of assertions that the territory is overbuilt and that prices are weak. It is still maintained that plates and shapes are held at a price corresponding to 1.25c., Pittsburgh, and too little business of the large sort has been placed to prove anything to the contrary. Similarly steel bars remain at the 1.15c., Pittsburgh, basis except for attractive orders. Some 500 tons of plates cut circular were closed last week at the 1.25c. rate with the usual extra—one transaction which does not show great weakness; and there is a brightening in the possibilities of additional steel boat building, including 4000 tons in contemplation for coasting steamers—a condition calculated ordinarily to stiffen the market. Withal, a fair run of business is reported, keeping up at the rate of recent weeks, as the list of awards in structural lines given below will show. Improvement is reported in bar iron, but the volume of business is still below normal. Two of the larger awards in structural work went to the American Bridge Company, 5000 tons for section 12 of the New York subway and 4700 tons for the two bridges of the Central Railroad of New Jersey. Other railroad work includes: 500 tons, New York Central terminal work in New York, to L. F. Shoemaker & Co., and 200 tons, bridge work, Seaboard Air Line, to Virginia Bridge Company. Recent awards for buildings include 1200 tons, Y. W. C. A. building, New York, to A. E. Norton Company; 600 tons, commercial art galleries on East Fortieth street, New York, to Hay Foundry & Iron Works; 450 tons, hotel in Savannah, Ga., to Lauer & Harper, Washington; 500 tons, First National Bank building, Boston, to New England Structural Company; 300 tons for branch building, Anheuser-Busch brewery, to Milliken Brothers; 200 tons for the plant of the Gilbert & Barker Mfg. Company, West Springfield, to Berlin Construction Company; 1200 tons, pavilions, Bellevue Hospital, to McClintic-Marshall Construction Company; 900 tons, St. Anthony's Hospital, Woodhaven, N. Y., to John Pirkel Iron Works, and 400 tons, Golet building, Fourth avenue and Thirty-first street, to Bethlehem Steel Company. The steel work has not yet been placed for the

Otis Elevator Company's new building in New York, involving about 1500 tons. In a few weeks bids will be wanted for the building structure for the Eagle Silk Company, Fourth avenue and Twentieth street, requiring perhaps 3000 tons. Bids are being taken for the Monahan Express building, Eighteenth street, 1000 tons. Added consideration to the approach work of the New York Connecting Railroad bridge brings back at least momentarily the promise of early settlement of this large project. No award has yet been made of the 1500 tons for the Seaman's Institute building, Coenties Slip. Quotations are: Plain structural material and plates, 1.36c. to 1.46c.; steel bars, 1.31c. to 1.36c.; bar iron, 1.25c. to 1.30c., all New York. Plain material and plates from store, New York, 1.70c. to 1.80c.

Cast Iron Pipe.—The New York Board of Water Supply will open bids October 31 from contractors for furnishing and laying about 7000 net tons of 48-in. pipe in the Bay Ridge section of Brooklyn. No other lettings of importance are announced for the near future. A fair demand is experienced for small lots for prompt shipment. Carload lots of 6-in. continue to be quoted at \$21 to \$22 per net ton, tidewater.

Old Material.—Consumers continue to purchase cautiously. Transactions are therefore confined to small lots and are usually of a bargain character. This applies as well to buyers of cast scrap as to consumers of heavy melting steel scrap. The general conditions are as unsatisfactory as at any time in the recent past. Dealers making shipments on contracts still encounter difficulty in having their deliveries accepted, but they are now being asked to make less of a concession than some time ago. The consumer will generally take any rejected scrap at a concession of 50 cents per ton. Dealers are chary about entering into commitments for future delivery because of the uncertainty of being able to buy enough low-priced material to average up with what they are holding at prices prevailing a month or so ago. They are receiving complaints from shippers that it does not pay to load old material at prevailing prices and consequently it is permitted to lie. The dealer and broker generally are unable to meet the views of mill operators, who of course are anxious to buy at lower prices so as to be able to make a profit out of their low-priced sales of finished products. A condition of this kind is not likely to last for any great length of time unless consumption should decrease considerably. Dealers' prices per gross ton, New York and vicinity, are about as follows:

Old girder and T rails for melting.....	\$9.25 to \$9.75
Heavy melting steel scrap.....	9.25 to 9.75
Relaying rails.....	20.00 to 21.00
Rerolling rails.....	11.25 to 11.75
Iron car axles.....	20.00 to 20.50
Old steel car axles.....	15.00 to 15.50
No. 1 railroad wrought.....	11.50 to 12.00
Wrought iron track scrap.....	10.50 to 11.00
No. 1 yard wrought, long.....	10.25 to 10.75
No. 1 yard wrought, short.....	9.25 to 9.75
Light iron.....	3.75 to 4.25
Cast borings.....	4.75 to 5.25
Wrought turnings.....	5.25 to 5.75
Wrought pipe.....	8.75 to 9.25
Old car wheels.....	9.75 to 10.25
No. 1 heavy cast, broken up.....	9.75 to 10.25
Stove plate.....	7.75 to 8.25
Locomotive grate bars.....	7.75 to 8.25
Malleable cast.....	9.75 to 10.25

Metal Market

NEW YORK, October 18, 1911.

The Week's Prices

Cents Per Pound for Early Delivery.							
Copper, New York.		Tin.		Lead.		Spelter.	
Oct.	Lake.	Electro-lytic.	New York.	New York.	St. Louis.	New York.	St. Louis.
12*	.....	.....	.....	.....	.....	.....	.....
13.....	12.50	12.25	41.45	4.25	4.10	6.15	6.05
14.....	12.50	12.25	.....	4.25	4.10	6.20	6.10
16.....	12.50	12.25	41.50	4.25	4.15	6.25	6.10
17.....	12.50	12.25	41.35	4.25	4.15	6.30	6.10
18.....	12.50	12.25	41.45	4.25	4.15	6.30	6.10

*Holiday.

Spot tin is a little higher. Copper is quiet and unchanged. Lead is somewhat firmer in the West. Spelter has advanced.

Copper.—There is a good steady buying of copper, although sellers would like to see more business. Reports are current that in some cases concessions have been made to induce trading, but no direct price cuts have been made and the average quotations remain un-

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changed with Lake copper at 12.50c. and electrolytic at 12.25c. In London to-day the copper market was firm and spot copper was sold at £55 7s. 6d. and futures at £56 3s. 9d.

Pig Tin.—The pig tin market is more quiet than it has been in some time. Prices have been fairly steady during the week, and although stocks are none too plentiful those who have tin to sell show no desire to squeeze the consumers. On the other hand, consumers seem to be very well supplied and they are taking the metal only in small quantities. Pig tin was offered in New York to-day at 41.45c. In London to-day the market was firm with spot tin quoted at £189 and futures at £188 12s. 6d.

Tin Plates.—The market in tin plates is seasonably dull. There is a good export movement on, but the buying in that direction has been induced by generous concessions. A reduction has been made in the domestic price of tin plates and the market for 100-lb. coke plates is now at \$3.64.

Lead.—Recent reductions in the price of lead have induced considerable trading. It appears that many consumers are very short of stocks and they have come into the market and bought generously during the last week. The result is that the price has been raised five points in St. Louis. In New York the price remains unchanged from last week at 4.25c., but the leading interest is getting its price and outside dealers are apparently letting the market alone.

Spelter.—Regardless of the weakness in other non-ferrous metals, spelter steadily advances and grows stronger. There are a number of large inquiries out and consumers are finding considerable difficulty in getting metal for early delivery. Many producers claim to be sold up, and while the claim is made that the market is being manipulated the fact remains that spelter is very strong and decidedly scarce for spot delivery. This morning spelter could not be had in New York for less than 6.30c. and the St. Louis price was 6.10c. It looks as though the market will advance further.

Antimony.—Antimony is very uninteresting. Cookson's can be had for 8.15c. and Hallett's for 7.65c. Chinese and Hungarian grades are offered at from 7c. up. Buyers are taking absolutely no interest in the situation.

Old Metals, New York.—Business continues very dull, with dealers' selling prices nominally unchanged, as follows:

	Cents per lb.
Copper, heavy and crucible.....	11.75 to 12.00
Copper, heavy and wire.....	11.37½ to 11.50
Copper, light and bottoms.....	10.50 to 10.75
Brass, heavy.....	8.00 to 8.25
Brass, light.....	6.50 to 6.75
Heavy machine composition.....	10.25 to 10.50
Clean brass turnings.....	7.75 to 8.00
Composition turnings.....	8.50 to 9.00
Lead, heavy.....	4.15
Lead, tea.....	3.90
Zinc, scrap.....	4.50

Chicago

OCTOBER 17.—For immediate shipment, buying week has been fairly active. In contrast, the interest in futures is at a minimum. The price of tin has fluctuated considerably during the week but has regained more than was lost and is now moving in higher levels. Lead is slightly lower, but a sharp increase in the price of spelter is noted with very light offerings. We quote at Chicago: Casting copper, 12.37½c.; Lake, 12.62½c., in carloads, for prompt shipment; small lots, ¼c. to ¾c. higher; pig tin carloads, 42.50c.; small lots, 44.50c.; lead, desilverized, 4.25c. to 4.30c., for 50-ton lots; corroding, 4.50c. to 4.55c. for 50-ton lots; in carloads, 2½c. per 100 lb. higher; spelter, 6.25c. to 6.30c.; Cookson's antimony, 9.25c., and other grades, 8.25c. to 8.75c., in small lots; sheet zinc is \$8, f.o.b. La Salle, in carloads of 600-lb. casks. On old metals we quote for less than carload lots: Copper wire, crucible shapes, 10.50c.; copper bottoms, 9.25c.; copper clips, 10.12½c.; red brass, 9.37½c.; yellow brass, 7.37½c.; lead pipe, 7.87½c.; zinc, 4c.; pewter, No. 1, 26c.; tinfoil, 32c.; block tin pipe, 36c.

St. Louis

OCTOBER 16.—The weakening tendency in lead continues, with the quotations to-day at 4.10c. to 4.12½c. Spelter's strength is greater every day, and the market to-day is firm at 6.25c. and sellers inclined to hold at that. Tin is a shade higher than last week at 40.85c. Lake copper has fallen off to 12.72½c., and so has electrolytic to 12.60c. Cookson's antimony remains unchanged at 8.47½c. In the Joplin market the past week

the top price was \$47 per ton for zinc sulphide on an assay basis of \$44 per ton for grades carrying 60 per cent. of metallic content. From this figure the basis ranged down as low as \$38 per ton for the poorer grades. Prices for calamine continued exceptionally strong at \$23 to \$25 per ton, assay basis of 40 per cent. metallic contents, with the top price running to \$32 for choice lots. Lead ore was weaker, the best paid being \$57 per ton and the bulk going at \$54 to \$55 per ton. Old metals are quoted as follows: Light brass, 4c.; heavy brass and light copper, 8c.; heavy copper and copper wire, 9c.; zinc, 3c.; lead, 3.25c.; pewter, 20c.; tinfoil, 29c.; tea lead, 3c.

Iron and Industrial Stocks

NEW YORK, October 18, 1911.

Transactions in stocks have not been large and prices have been comparatively steady. The range of prices on active iron and industrial stocks from Wednesday of last week to Tuesday of this week was as follows:

Allis-Chalm., com...	2½-3¼	Pressed Steel, com...	28¼-29
Allis-Chalm., pref...	9¾-12½	Pressed Steel, pref...	95
Beth. Steel, com...	28¼-28½	Railway Spring, com...	27½-28¼
Beth. Steel, pref...	56-56¾	Republic, com...	22¾-23¼
Can, com...	10-10¾	Republic, pref...	84¾-85
Can, pref...	85¾-87	Sloss, com...	40
Car & Fdry., com...	48-51	Pipe, com...	11¾-13
Car & Fdry., pref...	115	Pipe, pref...	44½-45
Steel Foundries...	31-32¾	U. S. Steel, com...	58½-61¾
Colorado Fuel...	26½-27	U. S. Steel, pref...	108¾-109¾
General Electric...	149½-152	Westr. Elec.	61¾-66
Gr. N. Ore Cert...	49¾-52	Va. I. C. & Co...	60
Int. Harv., com...	103-104¾	Am. Ship, com...	49-50
Int. Harv., pref...	116	Chic. Pneu. Tool...	46½-47
Int. Pump, com...	26-27½	Cambria Steel...	43-44
Int. Pump, pref...	81½	Lake Sup. Corp...	24¾-28
Locomotive, com...	34¾-35½	Warwick...	10¼
Locomotive, pref...	104-105	Crucible Steel, com...	10¼-10½
Nat. En. & St., com...	15	Crucible Steel, pref...	75¾-76¾
Nat. En. & St., pref...	94		

According to the printed plan of the merger of the Alabama Consolidated Coal & Iron Company and the Southern Iron & Steel Company, the dividends on the preferred stock of the new company shall be cumulative at the rate of 6 per cent. per annum on and after July 1, 1912.

Kuhn, Loeb & Co., New York, have purchased \$5,000,000 five-year 5 per cent. secured gold notes of the Associated Simmons Hardware Company, which controls the Simmons Hardware Company, of St. Louis, established in 1874, and allied companies. These notes have been sold to provide money for funding existing obligations and additional working capital.

Dividends Declared

The J. G. Brill Company, regular quarterly, 1¼ per cent. on the preferred stock, payable November 1.

The Warwick Iron & Steel Company, regular semi-annual, 4 per cent., payable November 15.

Pittsburgh and Vicinity Industrial Notes

Mackintosh, Hemphill & Co., Pittsburgh, have received a contract from the Algoma Steel Company, Sault Ste. Marie, Ontario, Canada, for a pair of 55 x 60-in. direct-connected reversing blooming-mill engines. It has also received a contract from the Pittsburgh Crucible Steel Company, controlled by the Crucible Steel Company of America, for a 44 and 70 x 60-in. twin tandem compound direct-connected reversing engine for driving a new 40-in. blooming mill at its new steel works at Midland, Pa. The contract for the blooming mill will probably be given out within 10 days. The engine to be furnished by Mackintosh, Hemphill & Co. is very similar to the engine they built for the Duquesne Works of the Carnegie Steel Company and for the Aliquippa Works of the Jones & Laughlin Steel Company, both of which have made splendid records.

The Ellwood City Forge Company, Ellwood City, Pa., is about to install another cold saw and some special machinery. This company manufactures steam hammer forgings, such as engine crank shafts and other heavy work. It is a comparatively new concern, but is desirous of keeping its manufacturing facilities even with the demands made on it when business is normal.

The Keystone Bronze Company, operating two plants in Pittsburgh and another at New Brighton, Pa., has just

installed some new machinery in its machine shop at the Thirty-eighth street, Pittsburgh, plant, consisting of a 54-in. Colburn boring mill, Cincinnati shaper, bolt and nut tapping machine, screw cutting machine, etc., all of which are motor driven. The company makes brass, copper, bronze and aluminum castings, such as blast furnace tuyeres, bosh plates, locomotive and car bearings, babbit metals, etc. The new machinery is to finish a line of castings up to 10,000 lbs. in weight, the intention being to specialize in heavy machinery castings, mill work and large special work to specifications.

The Bessemer Gas Engine Company, Grove City, Pa., manufacturer of gas engines, pumping outfits, gasoline producing plants, etc., has recently sold the following engines: Herman Pneumatic Machine Company, Zelienople, Pa., one 65-hp.; Beard-Stephen Company, Columbiana, Ohio, one 20-hp., for its new machine shop; Kelso Grain Company, Cherokee, Kan., one 40-hp.

The Jamison Coal & Coke Company, Oliver Building, Pittsburgh, operating mines and coke ovens near Greensburg, Pa., and Barracksville, W. Va., reports that many manufacturers are specifying for larger tonnages of Jamison foundry coke than ordinarily, and that this condition enables the company to maintain its production on about as good an average as in the past.

The Isaac C. Dakin Company, West Newton, Pa., is manufacturing an automatic bridge wall for three types of boilers, such as cylinder, tubular and flue, which it claims maintains a pressure at a more uniform stage and on a lower fuel consumption. The company has installed several of these bridge walls and has tables showing the efficiency and saving in fuel, which will be sent on request to interested manufacturers.

The Borough of South Connellsville, Pa., has made a proposition to the American Sheet & Tin Plate Company that it will exempt the company from all taxes for a period of years if it will start up its Humbert Tin Plate Works there, which have been closed down for a long time.

The Titanium-Alloy Mfg. Company, Charles V. Slocum, general sales agent, 1225-1226 Oliver Building, Pittsburgh, is sending out a card, on which is shown that during 1910 the quantity of rails treated with titanium was 326,316 gross tons, which was more than 300 per cent. greater than the tonnage treated with nickel and 84,813 gross tons more than the output of all the other alloyed steels combined.

The Morgantown Board of Trade, Morgantown, W. Va., recently raised \$250,000 in seven days to be used in a campaign for exploiting local advantages as a manufacturing center. It is proposed to increase the fund to \$400,000.

The Republic Rubber Company, Youngstown, Ohio, will issue \$1,000,000 in preferred stock, half of it to be used in additions to the plant to be made at once, and the other half to be kept in the treasury for improvements to be made later. The company has more orders than it can fill, in spite of the fact that not long ago its plant was considerably enlarged.

The Independent High Grade Oil Company, Pittsburgh, has placed an order for 20 tank cars with the Warren Foundry Company, Warren, Pa. It is also figuring on the erection of three 50,000-gal. storage tanks in the Pittsburgh district.

Max Solomon, dealer in iron and steel scrap, Oliver Building, Pittsburgh, has bought the long idle plant of the Shenango Iron & Steel Company in Wheatland, Pa., with 15 acres of ground, for \$34,075. He has not decided as yet whether he will operate the plant, which comprises puddling furnaces, muck bar mills and finishing mills for making iron bars.

Reports that A. M. Byers & Co., Inc., Pittsburgh, would build 50 more puddling furnaces at Girard, Ohio, are officially denied. The company has 86 puddling furnaces at Girard, and does not contemplate any additions in the near future.

The Corry Metal Furniture Company, Corry, Pa., has increased its capital from \$50,000 to \$100,000.

Clinton furnace, of the Clinton Iron & Steel Company, Pittsburgh, which is now idle, is expected to blow in about November 1. It has recently been relined and repaired and will run on foundry iron.

Rail Branding and Heat Number Stamping

Robert W. Hunt & Co., inspection of rails and fastenings, 1121 The Rookery, Chicago, have issued a wall card which is of special interest to railroad men connected with the maintenance of way departments. The card gives details of the methods adopted by the steel rail manufacturers of the United States, Canada and Mexico in the branding and heat number stamping of steel rails. Each company has its own method of branding and stamping, and therefore each is taken up specifically, thus giving the practice employed at every mill.

The card states that the brand on rails gives the name of the manufacturer, a number or abbreviation by which the rail section is designated, the month and year of manufacture and, if the metal is open hearth steel, the letters O.H. are also added. Some times the letters F.T. are added to signify ferrotitanium steel. Square block letters and figures about an inch high are commonly used, and as these are cut into one of the rolls of the last pass the brand will always appear slightly raised at regular intervals on the web of the rail. The month is generally shown by Roman numerals, as VII for July and sometimes by a series of I's, as IIIII for May. The number representing the heat, blow or melt of steel and the letter to indicate the position of the rail in the ingot are stamped on the web of the rail with dies while it is still red hot, but after it has been completely rolled and sawed to length. It is to be remembered that the brand always appears in raised letters and that the heat number and letter are stamped on.

The Ashland Steel Company's New Officers.—The directors of the Ashland Steel Company, Ashland, Ky., have reorganized by electing the following officers: President, B. H. Burr, of Ironton; vice-president, T. M. Adams; secretary, Oscar Richey, of Ironton; treasurer and general manager, L. R. Putnam. This reorganization was necessary on account of the vacancy caused by the death of Ironton A. Kelly, who held the position of president and general manager. Mr. Burr, the former secretary, is promoted to the presidency, and Mr. Putnam, who was treasurer, is given the additional important position of general manager. No change will be made in the policy of the company, which will continue to be conducted as in the past.

Large bronze castings, thought to constitute the largest bronze group ever cast and erected in America, are on exhibition this week at the Roman Bronze Works, 275 Greene street, Brooklyn, N. Y. They form an artillery group, incidentally of remarkable realism and spirited action, for the General Grant monument in Washington, D. C. All told they weigh 28,600 lb. and the dimensions of the group are: Length, 28 ft.; width, 10 ft.; height, 11 ft. The castings were made in molds of a special composition regularly used by the company and are of what is termed standard United States bronze. The molds were formed around an aggregate of cast wax patterns, which are melted and absorbed in the heat treatment or baking of the molds. These are inclosed in brick retorts or heating chambers, containing the baking fires and built up around the green mold. After baking, the molds are placed in concrete casting pits where sand can be tamped around the molds. Henry Merwin Shrady is the sculptor and Edward Pearce Casey is the architect.

The Vulcan Supply Company has established its office at 1 Madison avenue, New York City. It is the intention of the company to purchase complete equipment for contractors, engineers and builders. Connections have been made with a number of mills, by which materials can be offered at attractive prices. A. G. Sivori, president of the company, has been the New York representative of the Orenstein-Arthur Koppel Company for a number of years. E. P. McDonald, vice-president, is also well known among the contractors in New York. The company is obtaining prices and catalogues on contractors' materials and would also consider the agency for the sale of any first-class article that would be interesting to contractors or engineers.

Personal

Charles U. Carpenter, formerly president of the Herring-Hall-Marvin Safe Company, Hamilton, Ohio, has been elected president of the Fire-Proof Furniture & Construction Company, Miamisburg, Ohio, and vice-president of the Republic Motor Car Company, Hamilton, Ohio.

O. P. Hood, head of the departments of mechanical and electrical engineering of the Michigan College of Mines, Houghton, Mich., has accepted an appointment as chief mechanical engineer of the United States Bureau of Mines, and will make his headquarters in Pittsburgh, Pa.

Manning E. Rupp has accepted a position as mechanical engineer with Stanley G. Flagg & Co., Philadelphia, Pa. He was formerly in the department of construction and engineering of the Isthmian Canal Commission, at Panama, and later associated with John W. King, consulting engineer, New York.

Charles E. Torrance, formerly instructor of experimental engineering, Sibley College, Cornell University, Ithaca, N. Y., has become associated with the Northampton Emery Wheel Company, Leeds, Mass.

R. G. McAuley, president of the McAuley Steam Trap Company, Pittsburgh, has resigned. New officers have been elected as follows: A. F. Cobey, president; H. W. Braden, vice-president; C. F. Cobey, secretary and treasurer.

Lucien Arbel, of the Establishment Arbel, Paris, France, which manufactures car wheels, has been visiting in this country inspecting a number of American car wheel plants.

Dr. Schuchardt, of Thyssen & Co., Melheim, Germany, who is connected with the gas engine department of that company, is visiting American manufacturers.

Otto G. Kaiser and Wilhelm Jung, of Röchling Bros., Ludwigshafen-on-the-Rhine, Germany, are spending several months in this country with a view to establishing a branch here for handling Röchling's electric steel.

H. Seaver Jones, formerly superintendent of the Empire Steel & Iron Company's blast furnace plant at Oxford, N. J., is now with the T. A. Gillespie and East Jersey pipe companies at 50 Church street, New York City.

Crispin Oglebay and D. R. Wilson, the former president of the Ferro Machine & Foundry Company, Cleveland, and the latter manager of sales of the foundry and machine shop of that company, sailed last week for a three months' business and pleasure trip abroad. During their absence they will visit the automobile shows in London and Paris.

H. F. J. Porter, 1 Madison avenue, New York, has been engaged as expert on fire prevention by the commission created by the New York Assembly to inquire into the conditions under which manufacture is carried on in the first and second class cities of the State. This commission, whose appointment was due largely to the Washington Place fire in New York City last spring, is expected to suggest such legislation as will eliminate existing peril to the life and health of operatives. It held the first of its public hearings in New York City last week.

Gano Dunn has just returned from abroad, where as a representative of the United States Government, and as president of the American Institute of Electrical Engineers, he has been attending the International Electrical Congress at Turin and the meeting of the International Electro-Technical Commission, the body that has been organized to bring about international uniformity of standards and practice in the electrical industry. Mr. Dunn, who for many years was first vice-president and chief engineer of the Crocker-Wheeler Company, and is a past president of the New York Electrical Society, has been elected a director and a vice-president of J. G. White & Co., Inc., New York.

Harry S. Brady, who for eight years was connected with the Youghiogeny & Ohio Coal Company interests at Cleveland, and who for the past two years has been general manager of Ohio for the Pittsburgh Plate Glass Company's coal interests, known as the Charleroi Coal Works, has left the latter company to become associated with the Moreland Coke Company of Pittsburgh's Cleveland office in the Rockefeller Building, where he and W. J. Houston,

manager of Ohio, will take care of the Moreland Company's business at that point. He will give particular attention to the sale of the company's Star Youghiogeny thin vein gas coal, the output of which is extremely large.

C. J. Nash, who has been with the Westinghouse Air Brake Company, as special representative in the draft gear department, has resigned to engage in the railroad supply business and will make a specialty of draft gear attachments. His headquarters will be in Pittsburgh.

Edward Bailey Cook, manager of the Warwick Iron & Steel Company, Pottstown, Pa., sailed last week for a six weeks' trip abroad, during which he will visit the Spanish iron ore mines of Sota & Aznar.

Obituary

J. H. Hillman, Sr.

JOHN HARTWELL HILLMAN, SR., who died suddenly of heart failure on October 10 at his home in Pittsburgh, belonged to the old school of iron manufacturers. He made charcoal pig iron before the Civil War in the old 3 to 7-ton cold blast charcoal furnaces of the type that existed in Ohio, Pennsylvania, Kentucky, Tennessee and Alabama, afterwards puddling this iron and selling it in the form of charcoal blooms and boiler plate. He was the fourth generation of his family that had been in this business, his father having manufactured iron in Kentucky, Ohio and Tennessee, and his grandfather and great-grandfather in New Jersey and Pennsylvania. Mr. Hillman's grandfather manufactured charcoal iron during the Revolutionary War and made cannon and cannon balls. J. H. Hillman, Sr., manufactured charcoal iron for cannon and cannon balls during the Civil War. He was



J. H. HILLMAN, SR.

on the Confederate side and fought under General Forrest, although his father was a Union man. After his father's death he continued in the manufacture of charcoal iron and boiler plate until the advent of steel boiler plate. In the South in the old days it was his custom to trade with the Pittsburgh machinery manufacturers, and the exchanges then were made by water, the machinery being sent south by boat, on the rises, to the furnaces and rolling mills located on the Cumberland River, and payment being made in pig iron. These exchanges took place in the days when machinery was worth 8 cents to 12 cents a pound, and the pig iron from \$50 to \$65 a ton.

Mr. Hillman moved to Pittsburgh in 1886 and started the brokerage firm of J. H. Hillman & Co., which later became J. H. Hillman & Son. Mr. Hillman was first to

bring Southern coke pig iron into Pittsburgh, shipment being made by river on coal barges returning from Southern trade. This was almost 25 years ago. About 1893 he became interested in Connellsville coking coal and was one of the pioneers in the opening up of the lower Connellsville or Klondike district, in which by far the greater percentage of Connellsville coke is manufactured to-day. He later became interested in the manufacture of the coke himself and continued in this business up to the time of his death. He was a member of the Sons of American Revolution, the Duquesne Club, and a number of other societies and clubs in the Pittsburgh district.

ZACHARY TAYLOR HALL, senior member of the firm of Hall & Carpenter, metal merchants, Philadelphia, Pa., died at Atlantic City, N. J., October 9, aged 60 years. He had been in poor health for several years and had not been giving close attention to business for some time. He was born in Philadelphia, and while still a young man became identified with his father's business. On the death of his father, August R. Hall, in 1893, he became the senior member of the firm. He was a member of the Union League, past president of the Metal Club of Philadelphia, and was also prominently identified with the Credit Bureau of the Philadelphia Tin Plate Jobbers' Association. He leaves a widow and three sons, E. Roberts, Haslet G. and Zachary T. Hall, Jr. Resolutions paying a high tribute to his memory were passed at a special meeting of the Metal Club of Philadelphia.

JOHN McLAREN, president of the Phillips & McLaren Company, operating foundry and machine shops in Pittsburgh, died suddenly at Braddock, Pa., October 14, aged 61 years. He was waiting for a train to take him to Pittsburgh. He leaves a widow and six children.

WASHINGTON HASTINGS, formerly of the Seidel & Hastings Company, Wilmington, Del., died in that city October 9, after a brief illness, aged 74 years. He was born in the vicinity of Wilmington, and when a young man entered the hardware business, remaining until he was 21 years of age, when he entered the employ of the Wilmington Plate Iron Works, which later became the Seidel & Hastings Company, manufacturer of iron and steel plates, in which he became the dominant factor. This company went out of existence about ten years ago. He was deeply interested in the civic affairs of Wilmington, and was for a time a member of the Board of Water Commissioners. At the time of his death he served as one of the minor judiciary of the city. He leaves a widow.

JOSEPH WATSON SIMS, who for the last 12 years was connected with Henry R. Worthington, Inc., at its Harrison, N. J., plant, and latterly manager of the meter department, died October 15 at his home in Orange, N. J., aged 44 years. He was a native of Cincinnati, where he received his technical training.

THOMAS NEELY, secretary and treasurer of the Neely Nut & Bolt Company, South Side, Pittsburgh, died suddenly at his home October 11.

AUGUSTINE R. TREADWAY, until last July president of the Peck, Stow & Wilcox Company, died at his home in Cleveland, Ohio, October 16, from heart failure, aged 75 years.

The Connellsville Coke Trade

The Weekly Courier, Connellsville, Pa., reviews the coke trade of the past week as follows:

The Connellsville coke trade is running along at an even gait. Production and shipments were practically the same as the previous week, save that slight gains are reported. The merchant operators of the region are putting forth a very successful effort to regulate production to consumption. Their yards are pretty free of stock coke and the furnace interest is also making a thorough clean-up. Coke that has lain on the yards of the Morgan Valley plants for more than a year is being loaded up and shipped. The coke region clean up will clear the trade atmosphere considerably, and if the iron and steel business increases, which is probable, there will be an increase in coke production. The business just now is in a renovating and waiting stage.

In production there was a gain of 691 tons as compared with the week before, the total being 314,343 tons

as against 313,652 tons. To the furnace ovens belongs the credit for the gain, with an increase of 2490 tons. The merchant ovens, on the other hand, fell off 1799 tons.

The number of active ovens in the region was increased by the firing of 20 ovens at Oliver No. 2, 15 at Semet-Solvay, 50 at Martin and 10 at Mt. Hope, and decreased by the blowing out of 70 at Brier Hill, making a net gain of 25 ovens.

The prompt furnace coke market has continued strong, but has not been active. A sale of about 50 cars was made at \$1.50, and a few other lots are understood to have gone at the same figure. There is practically no demurrage coke coming out these days. A number of the producers quote \$1.50 for prompt furnace coke, but such quotations usually cover relatively small lots, there being no large offerings. The demand for prompt coke has been limited for several weeks, the furnaces all getting good deliveries on their contracts.

Foundry coke is being well taken on contract, but fresh demand is light, consumers having already made contracts covering their usual periods. A few contracts expire at the end of this year, but in general the foundry coke contracts run to July 1 or Aug. 1.

National Implement and Vehicle Association

The initial meeting of the consolidated agricultural implement, vehicle and other allied manufacturers' associations in one convention as the National Implement and Vehicle Association opened at the Congress Hotel, Chicago, Tuesday morning with an enthusiastic gathering of 300 members. The Tuesday and Wednesday morning sessions were devoted to the organization of the convention, the reading of reports from officers and standing committees and the appointment of the temporary convention committees. The session of particular importance was that of Wednesday afternoon, at which time a sales managers' meeting was held for a general discussion of their problems, followed by a discussion as to the costs of doing business, directed by Harry Mead, Wichita, Kan., and C. M. Johnson, Rush City, Minn. The entertainment of the convention included a theater party on Tuesday evening, a reception and ball on Wednesday evening and the annual banquet on Thursday evening.

The Lackawanna Steel Company's Earnings.—The combined earnings of the company and subsidiaries for the three and nine months ended September 30, 1911, were as follows:

	Three Months.				
	Total income.	Int. on bds. and notes.	S. F. and exhaustion.	Depreciation, etc.	Balance, surplus.
1911..	\$799,936	\$437,500	\$86,867	\$235,499	\$40,070
1910..	1,440,150	437,500	101,656	308,638	592,356
	Nine Months.				
1911..	\$2,406,297	\$1,312,500	\$201,059	\$745,094	\$147,644
1910..	4,888,493	1,292,083	293,270	1,016,804	2,286,335

The unfilled orders September 30, 1911, were 189,898 gross tons, against 261,931 in 1910. The company also reports balances on October 1 as follows: Accounts receivable, \$4,086,937; cash on hand, \$4,385,970; current liabilities, \$864,392.

The American Locomotive Company, 30 Church street, New York, received the following orders last week for steam shovels and locomotives: Chickamauga Quarry Construction Company, Chattanooga, Tenn., one class 25-11-1¼ steam shovel; Western Pacific Railway Company, one rotary snow plow, scoop wheel type, 18 x 26-in. cylinders, 12-ft. cut. Its Montreal Locomotive Works booked the following: Roger Miller & Son, Toronto, two four-wheel saddle tank locomotives (040-T type), cylinders 11 x 16 in., driving wheels 33 in. and total weight in working order 39,000 lb.; P. Lyall & Sons, Ltd., Montreal, one four-wheel saddle tank locomotive (040-T type), cylinders 13 x 18 in., driving wheels 36 in. and total weight in working order 56,000 lb.

The Kelly Reamer Company, 1555-57 Columbus road, Cleveland, Ohio, has recently opened offices at 96 and 98 Reade street, New York; 170 Oliver street, Boston, Mass.; 112 Queen Victoria street, London, England. The company reports an unusual demand for its product, with indications of continued increase during the winter months.

The New York Electrical Exposition

In addition to the features of popular interest, such as Government exhibits showing methods of planting submarine mines, signal corps work, electrical agricultural appliances and the household goods exhibits, at the Electrical Exposition, which opened October 11 and will continue until October 21 at the New Grand Central Palace in New York, there are many exhibits calculated to attract the attention of the industrial world. Among these are numerous electrically propelled commercial vehicles and exhibits of underground conduit systems carrying electrical cables.

One of the largest displays of industrial equipment is that of the General Electric Company which shows motors, arc lamps, air compressors and heating devices. The Westinghouse Companies also have a large section devoted to the exhibition of factory lighting systems, direct current motors, electric meters, etc. The Crane Company, Chicago, is exhibiting automatic cut-out valves, stop check valves, etc. The Electrical Controller & Mfg. Company, Cleveland, Ohio, exhibits automatic motor starters and controllers in operation. The Electrical Testing Laboratories, New York, has a display of testing equipment. The Habirshaw Wire Company, Yonkers, N. Y., shows rubber covered wires. The Fred Lee Company, New York, exhibits steel reflectors and lamps for lighting systems. Other exhibitors are the National Electric Lamp Association, a 3000-watt cluster of lamps, carbon lamps, etc.; the New York Edison Company, window lighting systems and electrical goods of popular interest; Otis Elevator Company, motor-operated passenger car; the Revolute Machine Company and Topping Bros., New York, complete drafting room equipment; Rider-Ericsson Engine Company, New York, electrically operated water supply system; Watson-Stillman Company, New York, turbine pumps; L. J. Wing Mfg. Company, New York, positive pressure blowers, disk fans and turbine blowers; Eimer & Amend, New York, electric laboratory appliances; Multiple Unit Electric Company, New York, electric muffler furnaces, crucible furnaces and combustion furnaces.

The exposition was formally launched at a luncheon given on the evening of the 11th in the same building by the New York Edison Company to Thomas A. Edison, attended by many notables in the electrical world. The producers and consumers of copper seized the occasion as a fit one on which to present the inventor with a gift that would express their appreciation of the part his inventions have played in the continuous stimulation of the copper industry. Their gift was a cubic foot of copper, cast with the greatest difficulty after six unsuccessful attempts. It weighs 486 lb., and rests upon a stout pedestal. "Edison" is the simple inscription on the top of the cube. One face bore this lettering:

Edison's First Invention
Oct. 13, 1868
Output of Copper, 377,664,000 Pounds
October 13, 1910
Output of Copper, 1,910,608,000 Pounds.

The tables at the luncheon were arranged to form a giant E, with Mr. Edison sitting on the right of the toastmaster, John W. Lieb, Jr. The speakers were President Charles Kirchhoff, of the American Institute of Mining Engineers; Editor Price, of the Electrical Review, and George B. Cortelyou, president of the Consolidated Gas Company. T. Commerford Martin, secretary of the National Electric Light Association, presented the cube.

Western Steel Corporation Receivership

At Seattle, Wash., receivers were appointed by the United States District Court on October 13 for the Western Steel Corporation. The petitioner was the Metropolitan Trust Company, of New York, which, it is stated, holds the notes of the corporation for \$600,000. The receivers will serve only until the creditors select a trustee. It was announced some weeks ago that the stockholders of the company had authorized a bond issue and that the president, James A. Moore, of Seattle, had made arrangements for placing the bonds.

The Western Steel Corporation was incorporated in the State of Washington August 2, 1901, acquiring \$2,768,000 out of the \$3,000,000 capital stock of the Western Coal

& Iron Corporation, Ltd., a Canadian company, with mineral claims in British Columbia, Nevada and Washington. The corporation's plant is at Irondale, 38 miles north of Seattle, and consists of a blast furnace with a capacity of 75 tons a day, three open-hearth steel furnaces and blooming and merchant mills. The authorized capital is \$15,000,000 common, \$5,000,000 6 per cent. non-cumulative preferred stock and \$2,000,000 first mortgage bonds. The directors are for the most part residents of Seattle and Tacoma, Wash.; Vancouver, B. C., and San Francisco. Some Boston and Worcester, Mass., capital is also represented. President Moore is also at the head of the Irondale Realty Company, which it is stated disposed of about \$500,000 worth of property in the vicinity of the steel plant. The corporation had a number of iron ore leases and it was announced last year had made a 15-year contract for the importation of Chinese iron ore and pig iron from the Han-Yeh-Ping Iron & Coal Company, Ltd., operating the Hanyang Iron Works near Hankow on the Yangtse River. A number of shipments of both ore and pig iron were made under this contract. Bars were among the products of the company and a horseshoe plant and a nut and bolt works were projected.

New Vessels for Panama and Pacific Trade

The American Hawaiian Steamship Company, whose plans for four 9000-ton freighters to engage in trade between the Atlantic and Pacific coasts were announced some time ago, has let the contracts for these boats to the Maryland Steel Company. While this addition to the company's capacity has been spoken of as due to the approaching completion of the Panama Canal, it is expected that a portion of the tonnage will be available for trade on the present lines a year or two before the canal is opened. The contract calls for final delivery in the summer of 1913. The company expects to reduce its time from New York to Pacific ports to 21 days when the canal is open, and hopes to put the new schedule into effect by the beginning of 1914.

Reference has already been made in these columns to the incorporation in New Jersey of the Atlantic & Pacific Transport Company, of Baltimore, with a capital of \$15,000,000. It is headed by B. N. Baker, formerly president of the Atlantic Transport Company. The plans of the new incorporation contemplate the construction by 1913 of 15 steamers to engage in mail service between New York and Colon, New Orleans and Colon, San Francisco and Panama, with fortnightly service between Seattle and Panama.

The Ingersoll-Rand Company has issued a statement of earnings to the New York Stock Exchange for the six months ended June 30, 1911, as follows:

Earnings of properties.....	\$624,587
Provision for depreciation.....	231,148
Net earnings.....	393,439
Interest on bonds.....	\$50,000
Dividend on preferred stock.....	75,759
Special reserve in respect of patents.....	5,000
	130,759
Net addition to surplus.....	262,679

The general balance sheet as of June 30, 1911, shows depreciation reserve, \$1,539,773; patent and license reserve, \$640,000; additional patent and license reserve, \$5,000; special inventory reserve, \$800,000; profit and loss surplus, \$1,777,029.

A. J. Goss, 6506 Perry avenue, Chicago, has been appointed sales manager of the E. Killing's Molding Machine Works, Davenport, Iowa, for Pennsylvania, Ohio, West Virginia, Kentucky, Indiana, Illinois, Missouri, Michigan, Wisconsin and Minnesota. Buffalo, N. Y., and towns within a radius of 100 miles of that city are reserved to the Buffalo Foundry Supply Company, which has the selling agency of the Killing machines for that territory.

The Wm. Cramp & Sons Ship & Engine Building Company, Philadelphia, Pa., on October 10 launched two vessels for the Cuban Government, one a cruiser, the Cuba, the other a naval training ship, the Patria. The former vessel is a twin screw vessel 260 ft. long, with a displacement of 2055 tons, while the latter is 185 ft. long and has a displacement of 1200 tons.

Steel Works Labor Conditions

An Inquiry Covering the Lackawanna and Other Independent Companies

The Survey, the weekly journal published under the Charities Publication Committee of the New York Charity Organization Society, has an article in its issue of October 7 dealing with the town of Lackawanna, N. Y., and the living conditions of the employees of the Lackawanna Steel Company, whose families chiefly make up its population. The writer is John A. Fitch, the member of the staff of the Pittsburgh Survey especially charged with the investigation of steel works conditions, and the article is one of a series having the general title "The Human Side of Large Outputs—Steel and Steel Workers in Six American States." In its editorial referring to this series, the Survey says that Mr. Fitch's investigations were made possible by the gift of Charles M. Cabot, of Boston, a stockholder in the United States Steel Corporation who has been active in drawing public attention to labor conditions in the steel works of the country and living conditions in steel works towns. Mr. Fitch's inquiry covered the large independent steel mills in Pennsylvania and those at Lackawanna, Gary, South Chicago, Pueblo and Birmingham. It appears that these investigations have all been made and that what remains is the publication of the articles.

Commenting on the statement made by Charles M. Schwab that the conditions at the Bethlehem Steel Company's plant, which the government investigated last year, were not worse than those at other steel plants, the Survey says:

What we find is that Mr. Schwab is, in the main, correct. Everywhere we have found long hours, overtime, Sunday work, and low wages. Striking advances we have found in the protection of employees from personal injuries. The Steel Corporation has devised a safety organization of remarkable scope and effectiveness—one with inspection which puts to shame the factory inspection of any of our State governments. In its relief plan, it has gone a long way beyond the demands of statute and common law in the States in which its plants are located. A movement away from the seven-day week is discernible, and at the same time open advocacy of the twelve-hour day. When the American Iron and Steel Institute this spring appointed a Welfare Committee, the members, according to President Clarke of the Lackawanna Steel Company, were fairly staggered by the size of the problem before them. This note of sincerity no less than breadth of outlook has characterized the statements given out as to the work which the committee has set for itself.

The article on the town of Lackawanna, N. Y., and the living and employment conditions of Lackawanna Steel Company workers takes up 16 pages of the Survey and is illustrated. The author grants that some of the undesirable conditions he describes are due to the natural crudeness of a young and rapidly built city. The thing in the whole article which calls for severest criticism is that prominence is given on every page to conditions of which complaint is made, while the efforts the steel companies are making to remedy these conditions, which should be the strongly emphasized feature of such articles, are relegated to the fine type of a footnote. The author might well have displayed at the outset of his article this paragraph which we find in insignificant type at the bottom of a page. It tells of the changes the Lackawanna Steel Company has made so as to give one rest day in seven to its workmen.

"In the spring of 1911 important changes took place. The blast furnace crews were organized on such a basis as to give each man one day of rest in seven. An attempt was made to do the same in the coke ovens, but the men objected on account of dissatisfaction with the day of rest allotted, so the plan was abandoned. The men do take off about three days in each month. In addition to these changes, which give a weekly rest day to 1300 or 1400 men, the working day for the common labor force has been reduced from twelve to ten hours."

Elsewhere it is stated that the Lackawanna Steel Company had offered slag free to the city for filling the swamp in the boarding house district to which the article particularly objects, and that the South Buffalo Railway Company, a subsidiary of the steel company, offered to haul the slag free and dump it at convenient points. The steel company has recently interested itself in social work, employing James Bronson Reynolds to make a thorough investigation of social conditions. It is admitted that "a number of interesting and hopeful things have resulted

directly and indirectly from Mr. Reynold's report, the first of its kind submitted to the officials of a large employing steel corporation by a man of independent standing as an economist and social worker." Of these "interesting and hopeful things" Mr. Fitch's article enumerates the following:

One of the first things was the organization of a sociological department. So far it has not been determined just what lines of activity are to be taken up by this department, but a way is being blazed out for it in an interesting manner. About a year ago a settlement, in which several Buffalo people were interested, was started in Lackawanna by Miss Emma Kaan, an artist of Hungarian descent. A committee has been organized of which George P. Sawyer, of Buffalo, is chairman, and with which General Manager C. H. McCullough, of the steel plant, is co-operating. This committee has assumed charge of the settlement and of social work in general in the community. One year ago there was practically no social work in Lackawanna. Now, in addition to the settlement itself, there is a model lodging-house conducted by the settlement; two visiting nurses are at work; a Y. M. C. A. worker, who last winter conducted evening classes for men, spent the summer in charge of a boys' camp in the country near Lackawanna; a trained Charity Organization Society worker has been in the field since March; a playground has been opened and a director secured; a modified milk station and a dispensary have been established. Of the expense attendant upon these enterprises five-sixths is borne by the steel company.

During the past month Elizabeth S. Williams, long headworker of the College Settlement on Rivington Street, New York, has taken up residence in Lackawanna. Miss Williams takes temporary charge of the settlement to develop its activities; and during her stay she will study the needs of the community and help organize further efforts at improvement. The sociological department of the steel company will undoubtedly keep closely in touch with this outside work and thus rather remarkable co-operative relationships for improvement in mill and town will be instituted. The application of the experienced judgment and democratic standards of neighborhood workers, who have had their training in the tenement life of the great cities, to such an outlying self-contained industrial community as Lackawanna is in itself an experiment which will be watched with interest.

The Frontier Iron Works Adds New Lines

The Frontier Iron Works, Buffalo, N. Y., has acquired a controlling interest in the Buffalo Aluminum & Bronze Company. The transfer of the property of the latter company has already taken place and the following directors or stockholders of the Frontier Works have been elected officers of the Aluminum & Bronze Company: Walter M. Semon, president and treasurer; Timothy M. Light, vice-president; James W. Murphy, secretary. The Aluminum & Bronze Company operates a foundry for making aluminum and bronze castings, largely for the automobile and motor trade, and also conducts a department for aluminum hollow ware.

By adding its new connection, the Frontier Iron Works is now able to supply a complete line of castings to its various customers. It has for many years made a specialty of cylinder castings for the automobile and motor trade and has also operated an extensive plant for the manufacture of machine tools, in which its principal products have been a patented tilting table drill press and the well-known Royal power hack saws. A new line will also be added, consisting of motors for aeroplanes on which the company has made experiments for more than a year and has now brought out a very successful design of an aeroplane engine. The company has doubled its capital stock to take care of the extensive additions to the plant which are necessary for the manufacture of these motors. The offices of the Frontier Iron Works are located at the corner of Grant and Letchworth streets and the newly acquired plant of the Buffalo Aluminum & Bronze Company is situated on Letchworth street, directly opposite.

Recent foundation contracts awarded to the MacArthur Concrete Pile & Foundation Company, 11 Pine street, New York, N. Y., include those for the inbound and outbound freight houses of the Père Marquette Railroad at Saginaw, Mich., a large machine shop for the Westinghouse Electric & Mfg. Company, East Pittsburgh, Pa., and the Fulton County Court House, Atlanta, Ga. The last contract calls for over 1200 piles to support the building, which is to be a 9-story reinforced concrete structure costing about \$750,000.

The testing of thermometers forms the subject matter of Circular No. 8 of the Bureau of Standards, issued by the Department of Commerce and Labor, Washington, D. C. Besides methods of testing and calibration of thermometers, methods are given for using precision thermometers. The pamphlet is a cyclopedic treatment of thermometry.

The Great Northern Iron Ore Lease

Some Stipulations of the Hill Deal with the Steel Corporation That Have Been Lost Sight Of—Royalties May Reach High Figures, but Are Not Increased by 3.4 Cents as a Regular Factor

Based upon a brief penciled memorandum made in 1906 and subscribed with the initials "E. H. G." and "J. J. H.," there were issued that year by the Great Northern Railway 1,500,000 "ore trust certificates" representing control of or ownership in certain lands on and adjacent to the Mesaba iron ore district of Minnesota. Readers of *The Iron Age* are so thoroughly conversant with the wonderful history of that mining district that it is useless to repeat here what the control of large tracts of lands on the range means to a steel-making company. This memorandum was turned over to the legal representatives of the United States Steel Corporation at Duluth, to be elaborated into legal shape, and nearly a year later the formal lease of the Great Northern lands on the Mesaba to the Steel Corporation was ready for delivery to the principals. The lease comprises a printed book of more than 1000 pages, and a sufficient number of copies was issued for delivery to the principals only; the instrument was never placed on record.

In connection with this lease is another document running from the Great Northern Railway Company to the Ore Trustees, transferring all its interests in these lands to the trust, under certain conditions, and minutely specifying lands, powers, salaries, etc., of the trustees, their manner of perpetuation, the interest of certificate holders, etc. Great secrecy surrounded both these documents; this one also has been kept from the records.

These ore certificates are based chiefly upon mining leases of lands on or near the Mesaba range, between certain subsidiary companies of the Great Northern Railway and other parties, on the one hand, as lessors and various mining companies, on the other hand, as lessees. What is commonly known as the "Hill Ore Lands Deal" with the Steel Corporation is the most important of the various leases of lands controlled by the railroad company. This is true, not only from the fact that it doubtless covers a greater tonnage of iron ore than any lease by the Great Northern to other concerns, but because of the fact that it is based on a higher rate of royalty than was ever known in that district for any large tonnage, and a rate that annually increases, is on a basis of enormous annual output, and because it has emphasized the large control of ore supply by the Steel Corporation, to which attention was drawn in the report of Herbert Knox Smith, commissioner of corporations.

Limits of the Mesaba Formation

The iron-bearing formation known as the Mesaba range lies in a generally east-northeast and west-southwest trend, commencing in Township 59-14 and ending near the Mississippi river, in Township 55-25, an approximate length along its course of about 75 miles. East of 59-14 merchantable ore has not yet been found in any considerable quantity, and west of the Mississippi river the region is thickly covered by drift, and the strike of the formation is not definitely assured, while what ore has been discovered is generally of quite low grade. By exploration carried on continuously during the past 20 years the northern limit of this productive region has been quite thoroughly determined and it is useless to expect to find iron ores of the Mesaba type in the sedimentary and eruptive rocks to the north. A quartzite rock lies under and close to the ore-bearing rock in most cases, and beneath it are eruptive rocks of great age. But exploration has not yet determined with absolute precision all points on the southerly line of the productive formation. There is a possibility that an occasional minor discrepancy may be found between what is now recognized as the general contact between the ore formation and the south slates and the true contact, as it may ultimately be found to lie. That such discrepancies, if they exist at all, will be slight and of trifling importance, so far as general results are concerned, may be assumed as certain. In accord with

the universal geological theory as to the origin of the commercially valuable ores of the Mesaba, it will be impossible for ore to extend for any material distance to the south of the edge of these slates or beneath them; therefore they may be assumed to limit the possible southerly extension of ore bodies of the district.

The Great Northern Lands and Leases

Great Northern Railway lands are bounded quite closely on the north by the north line of the productive formation, with but comparatively few tracts on lands that are assuredly unproductive and in the quartzite or eruptives; but there is a considerable proportion of the acreage too far to the south to be classed as probably valuable for ore, unless the formation is much wider than exploration has proved it or than geologists have reason to suspect. Most of these latter lands, probably worthless for iron ore, are held under fee title, and are therefore of but trifling carrying cost; but a few of the tracts held under lease on this south side of the formation have been abandoned by the sublessee after exploration or examination.

The various lessors in interest are the West Missabe, Wright, Davis, Wells and Stone land companies; the Wabigon, Minosin, Niniwa, Nibiwa and Wenona iron companies; the Leonard, Arthur, Fillmore, Harrison, Jackson, Tyler, Polk and Van Buren iron-mining companies. These concerns are subsidiaries to the Great Northern Railway and hold lands under fee titles, in whole or in part; have various leases from the school lands of the State of Minnesota and from corporations and individuals; on all of these they receive all or a certain part of the royalties paid on ores taken therefrom by the Great Western Mining Company, which is the holding department of the United States Steel Corporation for the Hill ore lands.

Of lands covered by the lease to the Great Western Mining Company there are 39,280 acres, more or less; of this the Great Northern holds in fee about 19,700 acres, has a half interest in some 15,400 acres more, owns other fee interests than half in some 360 acres and has under lease from other fee owners at royalty rates that permit it a profit in the Steel Corporation transaction 3800 acres more. All these figures are necessarily triflingly approximate. The Great Northern also holds in fee the title to some 1420 acres that had been leased to other operators than the United States Steel Corporation prior to the date of the execution of the Great Western instrument and before the Great Northern had commenced negotiations with the corporation. One of these leases had descended to the Great Northern from the earlier proprietors of the land; that being to the Mahoning Ore & Steel Company, covering 150,000,000 or more tons.

Additional to all these lands, there is a considerable acreage in the Great Western lease in which ore certificate holders have no interest, as the lands are leased to the Great Northern at the same rate of royalty as the Great Northern receives from the Steel Corporation. As to these lands the Great Northern Railway is beneficiary, so the ore taken therefrom must be shipped to Lake Superior over that line, which secures what is commonly supposed to be a very large profit thereon. These tracts include parcels owned by the Northwestern Improvement Company (Northern Pacific Railway Company) and also lands owned by Longyear & Bennett and others. Many of the tracts included in the main instrument, and in which the Great Northern road has a half interest in fee, are owned, as to the other half, by Longyear & Bennett, and are included as a whole, but the entire royalty derived from one half the ore goes to Longyear & Bennett and not to the Great Northern. In these cases the Great Northern Railway benefits as above.

In what are known as "Walker lands," lying near the Mississippi river and included in the Steel Corporation lease, the Great Northern owns an undivided one-half the

title. The remaining half is the property, in fee, of the Lorain Iron Company, a subsidiary of the Steel Corporation, and on half the ores mined from these Walker lands the Great Northern Railway is not entitled to the freightage. This is the only exception to the rule of the lease that this road shall receive the freights paid on all ore taken from lands included in the Great Western leasehold.

The Scale of Prices

The lease to the Steel Corporation provides for the mining and shipment of at least 750,000 tons of iron ore during the year 1907, this minimum amount to be increased by 750,000 tons a year until it shall have reached the annual total of 8,250,000 tons in the year 1917. From that time until the exhaustion of the ore bodies in this land, the annual minimum shall be the vast amount of 8,250,000 tons. Royalties are to be paid based upon the quality of the ore, in units of iron only and without regard to phosphorus or other deleterious elements. Ore containing 59 per cent. of iron, dried, which is probably about 52 per cent. natural, as Mesaba ores average high in moisture, is the base on which all royalties are computed. For the year 1907 such an ore was to pay a combined royalty and freight to Lake Superior of \$1.65, of which 80 cents is freight. This latter sum is fixed for the period of the lease on ores of whatever grade. Of the entire amount received, this is the proportion that goes to the Great Northern Railway itself, and inures to the benefit of stockholders of that company alone. Should freights decrease, the royalty portion rises similarly. Annually, after 1907, the proportion of the amount that is paid as royalty is to be increased by a sum equal to 4 per cent. interest on the original royalty, or 3.4 cents a ton on the 85-cent basic ore. Thus in 1908 the royalty portion of the payment was 88.4 cents a ton, in 1911 it is 98.6 cents and in 1915 it will be \$1.122, to all of which must be added the further sum of 80 cents a ton to get the actual cost of delivery of a ton of that ore to Lake Superior in those years.

Beginning with the base of 59 per cent., dried, the royalty rises or falls 4.82 cents for each per cent. of iron in the analysis. In other words, a 60 per cent. iron ore was costing in 1907 for royalty only 89.82 cents, and a 55 per cent. ore 65.72 cents. For the year 1911 these two grades cost \$1.0419 and 76.24 cents respectively, and for the year 1915 they will cost \$1.1855 and 86.75 cents respectively. The year 1915 is especially referred to, as it is at this time that the Great Western Mining Company has its sole option of withdrawing from the lease.

The impression is general that the sliding scale of royalties is based on the definite factor of 3.4 cents per annum, added to the price of 1907; but this idea is not in accord with the terms of the lease, which is distinct as to the advance of 4 per cent. on the original prices, which are as follows:

Ore at	Royalty	Ore at	Royalty
59 per cent.....	\$0.85	58 per cent.....	\$0.8018
60 per cent.....	.8982	57 per cent.....	.7536
61 per cent.....	.9464	56 per cent.....	.7054
62 per cent.....	.9946	55 per cent.....	.6572
63 per cent.....	1.0428	54 per cent.....	.6090
64 per cent.....	1.0912	53 per cent.....	.5608
65 per cent.....	1.1392	52 per cent.....	.5126
66 per cent.....	1.1874	51 per cent.....	.4644
		50 per cent.....	.4162
		49 per cent.....	.3680

Other Stipulations of the Lease

Ore containing 49 per cent. metallic iron, dried, is fixed as the minimum merchantable standard that the lessor can require to be mined; should the lessee desire to extract any ores of lower grade he is to pay therefor a flat rate of \$1.10 a ton, royalty and freight combined, or 30 cents a ton for the ore itself. This provision is continuous.

At present rail freight and dockage charges from all Mesaba range points to Lake Superior ports amount to 80 cents a ton; but in case there is any change in these rates at any time during the term of the lease, whatever amount is taken from the freight shall be added to the royalty, making the sum of the two continuous. It is more than probable that in a reasonable time, and long before the exhaustion of this lease, there will be some change that will reduce the freight charge on Mesaba ores from 20 to 25 per cent. or more. In that case a larger portion of the total receipts will be received by the ore certificates, and less by the railroad company, the cost to the Steel Cor-

poration remaining as fixed under the original agreement.

Payments of royalties are to be made quarterly to the trustees at their office in St. Paul, Minn., for all ore delivered in the preceding quarter, and on January 20 of each year any deficiency in the shipments of the preceding year must be settled for, as though mined, and on the assumption that this ore was of the standard of the lease, namely, 59 per cent. iron. These deficiency payments do not, however, include freight or dockage charges, which are paid as the ore is actually shipped.

All general and special taxes, all liens and claims of every nature, are paid by the lessee, insuring to the Great Northern full payment of the minimum royalties each year.

The lease carries provision for full exploration of the lands, and more than the required number of drills has been continuously at work since the beginning of the term. As high as 92 drills have been employed at one time on these lands by the lessee corporation. At present the lands are almost completely explored and the number of drills employed is fewer, but is still above the minimum requirement.

Lease May Terminate January 1, 1915

If the lessee wishes he may surrender the lands, but at one specified date only, namely, upon January 1, 1915, and then upon written notice given by him to the trustees two years prior to that day. If not so surrendered, the lease continues until all merchantable ore, of 49 per cent. and over, has been shipped from fee lands, and as long thereafter as the annual minimum shall be paid. As to lands held by the Great Northern under leases, the Great Western lease terminates 90 days prior to the day upon which expire the leases under which they are controlled. Most of these latter instruments are of 50 years' duration, though some are less. That of the Leonard Iron Mining Company expires on January 1, 1920.

Most of the lands that the Great Northern holds under lease from other fee owners and has re-leased to the Great Western Mining Company are the property in fee of the State of Minnesota; and on these the State derives an income of 25 cents a ton on all ore mined, without regard to quality or date of mining. The difference between this 25 cents a ton and the price paid by the Great Western to the Great Northern represents the profits to ore certificate holders on this class of ore. Some of these leased lands are from corporations and individuals, and on these the rate of royalty varies; but it is universally on a flat basis, whatever the grade or time of extraction. These royalties, too, may be said to average about 25 cents a ton. There are some 30 or more of these leases, which it is unnecessary to enumerate.

New Mines Opened by the Steel Corporation

Since the execution of its lease and in carrying out the provisions thereof, the Oliver Iron Mining Company, acting for the Steel Corporation, whose mine operating department it is, has opened the Dale, Harold, Hill, Mace, Mississippi, Uno, South Uno and Walker mines, and has taken over the Leonard, that had been previously operated. To the close of 1910 the aggregate of annual minimum shipping requirements under the lease had reached a total of 7,500,000 tons, as follows:

In the year 1907.....	750,000 tons.
In the year 1908.....	1,500,000 tons.
In the year 1909.....	2,250,000 tons.
In the year 1910.....	3,000,000 tons.

During that period there had been shipped by the lessee from mines opened under the lease the total of 2,217,353 tons of iron ore, leaving an apparent deficiency of 5,282,647 tons, on which the Steel Corporation has paid the royalty (at the rate of 85 cents a ton for 1907, with the requisite increased sums for subsequent years), but which it has not yet been able to mine. The ore thus paid for in advance is to the extent of the payments an asset of the corporation, for it can be mined subsequently without additional payments except for the freight charge to Lake Superior. However, certain Great Northern interests have attempted to read into the contract a meaning that whenever the Oliver Iron Mining Company is able to take out these deficiencies of previous years it shall be obliged to pay not only the rate of the year in deficiency, but the added rate of the year in which the deficiency is wiped

out. That is, should the Oliver Company make up for the losses of 1907-8-9 in the season of 1910, it shall pay in addition to the price of those years a price increased by the interest up to the time of actual shipment. But the contract does not appear to warrant that contention.

Royalties on Deficiencies

But the apparent deficiency is not the same as the actual. Two of the mines mentioned above are situated on what is known as Walker land, and an undivided half interest in these lands is owned in fee by the Steel Corporation through its Lorain Iron Company. Therefore but one half the shipments from these mines can be credited under the lease. One of these is the Hill mine, and this had produced 801,088 tons prior to 1911, thus reducing the actual shipments under the lease to 1,816,809 tons, a deficiency on January 1, 1911, amounting to 5,683,191 tons. This can be best expressed as follows:

Royalty rate.	1907	1908	1909	1910
Mines—shipped,	\$0.85	\$0.884	\$0.918	\$0.952
Dale .....	.....	.....	.....	27,711
Harold .....	.....	.....	.....	801,088
Hill .....	.....	.....	6,857	987,910
Leonard .....	.....	.....	.....	15,267
Mace .....	.....	.....	.....	36,581
Mississippi .....	.....	.....	.....	341,939
Uno .....	.....	.....	.....	400,544
Deduct one-half Hill .....	.....	.....	.....	1,809,952
Requirements	750,000	1,500,000	2,250,000	3,000,000
Deficit	750,000	1,500,000	2,243,143	1,190,048
Total deficit .....	.....	.....	.....	5,683,191
Advances on ore not produced	\$637,500	\$1,326,000	\$2,059,205.27	\$1,132,925.70
Total advances to January 1, 1911 .....	.....	.....	.....	5,155,630.97

The minimum to be produced in 1911 amounts to 3,750,000 tons, at a royalty rate of 98.6 cents a ton. The royalties to be paid in January, 1912, will therefore amount to \$3,697,500, providing the Steel Corporation is unable to make settlement on the basis of the actual grade of ore shipped under the entire contract to that time. This it can do only providing it shall then have completed the shipment of all deficiencies to that time. As this will mean the shipment during 1911 of the enormous amount of 9,433,191 tons, it is most improbable that any settlement can then be made.

Indeed, in order to reach the accrued minimums up to the close of 1912 the Steel Corporation will have to take about 7,000,000 tons for each of the two years, and it is quite safe to say that the minimums will not have been met before the end of next year. Whenever that time arrives, there will be a return to the Steel Corporation of a sum based on the difference between the grades of ore paid for and those actually shipped. How much this may be is utterly impossible of determination now. But the assumption may be made that the average grade of ore shipped for these years will not be up to 59 per cent. and that the average grade to be shipped during the term of the lease will not exceed 54 per cent. But present shipments are from portions of the range where the ores run well up in iron, and may average nearly 59 per cent.

The purpose of this article is to discuss the Great Northern Railway's iron ore lands in their connection with the United States Steel Corporation, and without reference to the possible value of these ore certificates. Therefore any consideration of other leases by the railroad company is unnecessary and to be avoided. Nothing will be said, consequently, concerning other lessees than the Steel Corporation, of whom there are four.

About 300,000,000 Tons of Hill Ore

Estimates of the tonnage developed on the lands included in the Steel Corporation lease have varied widely, as is but natural. One estimator may consider mainly the possibilities of the situation, taking a broad view based on the prior development of the central portions of the Mesaba district and placing his belief on an optimistic base. Another may take what figures a mining engineer would consider safe, and estimate from the actual developed ore. At the time the lease was made, Mr. Hill was quoted as saying that there were 500,000,000 tons in the lands, but whether he referred to the lands covered by this lease or to the entire holdings of the Great Northern road was never made plain so far as the writer knows. But these figures were not meant to be taken as most people took them—as meaning that such a tonnage was developed. In conversation one day with the writer while sitting in the office of the president of the Great Northern, President Hill explained that these estimates were based upon occa-

sional holes that showed ore but were some distance apart, and that he had assumed the conditions observed at the holes would be found reasonably continuous throughout the intervening distance. But he recognized that these holes were much too far apart to permit such an estimate from the standpoint of a mining engineer. At that time an engineer, figuring on the basis that Mesaba practice had proved reasonable and conservative, would have cut that estimate down to about 175,000,000 tons. Indeed, about this figure was what the Duluth offices of the Steel Corporation then reported to New York as the tonnage developed on the lands under negotiation.

If Mr. Hill's estimate at that time was based on his expectation of the total tonnage on Great Northern lands that have been developed up to the present day, it was not far out of the way; and assuming this to have been his meaning, the remarkable foresight with which he has so often been credited is once more vindicated.

Since then exploration on the Steel Corporation lands has been continuous. At times the Oliver Iron Mining Company had from 90 to 100 drills on the property, more than double requirements, and it has now come pretty close to a complete exploration. There are now developed on these lands, as a mining engineer would measure ore, about 300,000,000 tons, and this amount is unlikely to be materially increased, except by reason of some considerable lowering of the minimum merchantable grade. Should there be such a demand for ore—and such prices for steel as to permit it—as to cause a material drop in ore-buyers' and furnace standards, this total would be indefinitely augmented.

Of the 300,000,000 tons a part is held by the Great Northern in fee; in another part a 50 per cent. fee interest is held; in still another there are various undivided fee interests; a part is held by underlying leases that average about 25 cents a ton, and a part is held in leases from parties who benefit to the full extent of the royalty paid by the corporation. These latter passed their lands through the Great Northern trust simply for the purpose of sharing in the benefits of a deal far more advantageous than they would have been able to make for themselves.

A Table of Royalties

With a gross tonnage as above stated the lease will expire by exhaustion of its ore in 1946, on the basis of a minimum annual output and a minimum of merchantable iron constant at 49 per cent. In this connection there is here presented a table showing the amounts of royalties per ton to be paid each year up to 1947 on three grades of ore—namely, 59 per cent., 54 per cent. and 49 per cent. The first is the standard of the lease, the second a probable average of shipments for a term of years and the third the lowest merchantable ore, as defined in the instrument of lease:

Year	Ore of 59%	Ore of 54%	Ore of 49%
1907.....	\$0.8500	\$0.60900	\$0.36800
1911.....	.9860	.70644	.42688
1912.....	1.0200	.73080	.44150
1913.....	1.0540	.75516	.45632
1914.....	1.0880	.77952	.47104
1915.....	1.1220	.80388	.48562
1916.....	1.1560	.82824	.50048
1917.....	1.1900	.85260	.51520
1918.....	1.2240	.87696	.52992
1919.....	1.2580	.90132	.54464
1920.....	1.2920	.92568	.55936
1921.....	1.3260	.95004	.57408
1922.....	1.3600	.97440	.58880
1923.....	1.3940	.99876	.60352
1924.....	1.4280	1.02312	.61824
1925.....	1.4620	1.04748	.63296
1926.....	1.4960	1.07184	.64768
1927.....	1.5300	1.09620	.66240
1928.....	1.5640	1.12056	.67712
1929.....	1.5980	1.14492	.69184
1930.....	1.6320	1.16928	.70656
1931.....	1.6660	1.19364	.72128
1932.....	1.7000	1.21800	.73600
1933.....	1.7340	1.24236	.75072
1934.....	1.7680	1.26672	.76544
1935.....	1.8020	1.29108	.78016
1936.....	1.8360	1.31544	.79488
1937.....	1.8700	1.33980	.80960
1938.....	1.9040	1.36416	.82432
1939.....	1.9380	1.38852	.83904
1940.....	1.9720	1.41288	.85376
1941.....	2.0060	1.43724	.86848
1942.....	2.0400	1.46160	.88320
1943.....	2.0740	1.48596	.89792
1944.....	2.1080	1.51032	.91264
1945.....	2.1420	1.53468	.92736
1946.....	2.1760	1.55904	.94208

At this last date the mines of the main lease will have become exhausted, providing no great additions are made to them by explorations yet to be carried out, and such additions are rather unlikely. If leaner ores shall become

merchantable there will be a large addition, impossible now to calculate.

As shown here the Steel Corporation in 1946 would be paying a rate of royalty amounting to \$2.176 per ton on a 59 per cent ore, and correspondingly on other grades. If, in the interim, the freight rate on ore from Mesaba points to Lake Superior ports is reduced to, say, 50 cents a ton, the royalty will be \$2.467. This is a royalty charge of a trifle more than \$5 per ton on steel made from this ore.

The Machine Tool Dealers' Meeting

Conclusion of the Proceedings

In *The Iron Age* of last week a report was given of the proceedings of the Machinery Section of the National Supply and Machinery Dealers' Association at its meeting at the Hotel Astor, New York City, on Tuesday, October 10. The fourth executive session was opened Wednesday afternoon with an address by W. M. Pattison, president of the W. M. Pattison Supply Company, Cleveland, Ohio, on the subject of "Service Rendered to Appraisal Companies in Connection with Appraisal of Machine Tools and Other Equipment." It was the general opinion of the members that the appraisal companies should not be furnished data free of charge as is now the custom.

Percy M. Brotherhood, of Manning, Maxwell & Moore, Inc., New York, opened a discussion on the "Uniform Proposal Blank" question, which was thoroughly gone into and the following form was adopted:

Uniform Proposal Blank

We propose to furnish you machinery as per schedule attached hereto and forming part hereof at prices set opposite the respective items.

Delivery.—F. o. b. our works, as specified.

Time of Shipment.—To be as specified.

Terms of Payment.—Net cash 30 days after date of shipment.

The time of delivery named herein is the approximate date of shipment from our works, and this corporation shall not be responsible for delays occasioned by strikes, fire or other causes beyond its reasonable control.

The acceptance of the machinery when delivered shall constitute a waiver of all claims for damages caused by any delay.

If there be several deliveries hereunder, settlement shall be promptly made for each invoice in accordance with above terms.

All previous communications between the parties hereto, either verbal or written, with reference to the subject of this proposal, are hereby abrogated and withdrawn, and this proposal, when duly accepted and approved, shall constitute an agreement between the parties hereto, and no modification of such agreements shall be binding upon the parties, or either of them, unless such modification shall be in writing, duly accepted by the purchaser and approved by an executive officer of this corporation.

Cancellation Clause.—Please note that all our proposals, quotations and acceptances of orders are made with the mutual understanding that orders are not subject to cancellation provided shipment is made within the time promised, and machines of special design, embodying special measurements, also motor driven, are not subject to cancellation, unless specially arranged for.

The foregoing proposal is subject to the approval of an executive officer of this corporation, and shall not be binding upon this corporation until so approved, nor unless accepted by the purchaser within thirty days from the date hereof.

There are no understandings or agreements outside of this written proposal.

Upon the close of the executive session the meeting adjourned.

Convention Notes

On Tuesday evening members of the National Machine Tool Builders' Association and of the Machinery Section of the National Supply and Machinery Dealers' Association enjoyed an entertainment as guests of Alex. Luchars, publisher of *Machinery*. The affair was held in the grand ball room of the Hotel Astor and a pleasing programme replete with amusing hits on machinery men was given. Supper was served, and during the evening a loving cup was voted to Henry Prentiss, of the Prentiss Tool & Supply Company, as the most popular machinery man. On Wednesday night the convention delegates were guests of the American Machinist at a theater party at the Hippodrome.

The Hyatt Roller Bearing Company, Newark, N. J., had an interesting exhibit of its line of roller bearings at the Hotel Astor on October 10, 11 and 12 in a room adjacent to the halls occupied by the Machine Tool Builders' and Machinery Dealers' conventions.

The National Machine Tool Builders

At the final session of the annual convention of the National Machine Tool Builders' Association, at Hotel Astor, New York, October 11, officers were elected as follows:

President, E. P. Bullard, Jr., Bullard Machine Tool Company, Bridgeport, Conn.

First vice-president, Fred A. Geier, Cincinnati Milling Machine Company, Cincinnati, Ohio.

Second vice-president, A. T. Barnes, W. F. & John Barnes Company, Rockford, Ill.

Treasurer, Albert E. Newton, Prentice Bros. Company, Worcester, Mass.

Secretary, Charles E. Hildreth, Whitcomb-Blaisdell Machine Tool Company, Worcester, Mass.

The sense of the meeting was that discounts to State and municipal institutions be eliminated, and a committee was appointed consisting of Wood Walter, Cincinnati Milling Machine Company, Cincinnati, Ohio; Murray Shipley, Lodge & Shipley Machine Tool Company, Cincinnati, and A. E. Newton, Worcester, to confer with a committee of the National Supply and Machinery Dealers' Association. This latter body comprises W. M. Pattison, W. M. Pattison Supply Company, Cleveland, Ohio; J. O. Harron, Harron, Rickard & McCone, San Francisco; Alfred Marshall, Marshall & Huschart Machinery Company, Chicago; R. J. Lynd, Chandler & Farquhar Company, Boston, Mass., and A. Schen, J. M. Wright & Co., St. Louis, Mo.

It was voted to employ a permanent secretary, the selection being left to the executive committee.

A motion was carried that hereafter the annual meeting shall continue for three days, and the semiannual meetings two or three days at the option of the executive committee. Atlantic City was determined upon as the place of the semiannual meeting next spring.

Hagan Sheet and Pair Furnace Contracts

George J. Hagan, Peoples Bank Building, Pittsburgh, has secured a contract from the Washington Tin Plate Company, Washington, Pa., for six sheet and pair furnaces of the same type that were designed and erected by him for the McKeesport Tin Plate Company, Port Vue, Pa., and two double annealing furnaces, stoker fired. In addition he has the contracts for bricking in and setting all of the Babcock & Wilcox and Heine water-tube boilers, aggregating about 2000 hp.; also setting in tin house machinery. Among other contracts which he has recently taken are the following: The Inland Steel Company, Indiana Harbor, Ind., four independent stoker-fired sheet and pair furnaces, being exact duplicates of those designed and erected for the Canton Sheet Steel Company, Canton, Ohio; Portsmouth Steel Company, Portsmouth, Ohio, six sheet and pair furnaces, also to be duplicates of the Canton installation, and six stoker-fired annealing furnaces; Allegheny Steel Company, Brackenridge, Pa., one stoker-fired continuous sheet steel box annealing furnace, which has a capacity for holding 15 boxes and is continuous in operation, similar to those operated by manufacturers in Germany and England.

Bretaud Steel Converter Installations.—J. V. Bretaud, foundry engineer and manufacturer of steel converters, Muskegon, Mich., recently completed the installation of a converter in the Dayton Steel Foundry Company's plant, Dayton, Ohio. This converter is of the Bretaud type, with a removable top and has a capacity of two tons. It has been in successful operation since the first blow, and, although most of the castings made consist of automobile parts, the metal is so fluid that no difficulty is experienced in pouring off entire heats with bull ladles filled from the converter. The company formerly made steel by the crucible process. A Bretaud converter is also being installed in the plant of the Muskegon Steel Casting Company, Muskegon, Mich. This converter has a capacity of one ton.

At Noblesville, Ind., October 14 an application for the appointment of a receiver for the Atlanta Tin Plate & Sheet Mill was filed in the Circuit Court. Henderson Coppock and nine other persons are plaintiffs. The plaintiffs allege that owing to mismanagement, the result of employing incompetent men, the operation of the plant has resulted in a large loss.

The Lake Superior Iron & Chemical Company

Directors and Officers Visit the Company's Plants

The Lake Superior Iron & Chemical Company, whose main office is in Detroit, Mich., operates a number of charcoal blast furnaces in Michigan and Wisconsin. The following article, reproduced from the Marquette Mining Journal of October 9, gives an account of the visit made to the company's plants that week by directors, officers and others interested:

The party left Chicago, which was its assembling point, Wednesday evening, and spent Thursday at Ashland, Wis., inspecting the company's plant there and enjoying the hospitality of Manager and Mrs. Johnson at a charming luncheon. Among the directors and officers of the company who made the trip a close personal inspection tour were W. M. McLeod, T. G. Scott and E. R. Peacock, of London, Eng.; E. R. Wood, president of the Dominion Securities Company and of the Canadian Bank of Commerce; J. M. McWhinney, president of the Union Trust Company, of Toronto; M. Cochran Armour, of Rogers, Brown & Co., Chicago; Frank W. Blair, president, and Charles R. Dunn treasurer of the Union Trust Company of Detroit; E. C. Norsworth, of Montreal, and W. H. Matthews, vice-president and general manager of the Lake Superior Iron & Chemical Company.

With these gentlemen were a number of others representing several financial interests who were desirous of making a general survey of the upper peninsula. They were Charles H. Moore, of Chicago; G. W. Lindsay and C. B. Neel, of New York; J. F. O'Hara, of Detroit, and Clarence H. Leonard, financial editor of the Detroit Journal.

The party spent Friday morning inspecting the Manistique plant, where a large amount of new construction work has been in progress. The Lake Superior Iron & Chemical Company is developing an 1800-acre farm on some of its cut-over lands in Luce County, a part of which is set aside for stock raising. All of Saturday was spent in Newberry, whence the party proceeded southward to East Jordan.

A vast amount of plant improvement and extension work has been completed by the company since the new organization took hold of the properties, and much more similar work at the several plants is in contemplation. Under the supervision of H. W. Dow, of Marquette, the company's mechanical engineer, there have been installed at Manistique a new central power plant and a new chemical plant for the manufacture of methyl alcohol and calcium acetate. The blast furnace has been overhauled and provided with a steel hoist tower, a cross compound blowing engine and a new lining. In addition to this, the kilns, smoke mains, condensers and fan houses have been largely rebuilt, and a 6,000,000-gal. pumping plant installed.

At Newberry, where, it is said, is to be found the most modern and completely equipped plant in the northern peninsula, there have been installed a 1500-hp. central steam power plant, an electrically driven saw mill for lumbering and the better preparation of cordwood for the retorts, a retort plant consisting of 20 retorts, with a capacity for carbonizing 160 cords of wood per day, a chemical plant for the manufacture of methyl alcohol and calcium acetate, and an extensive group of machine, blacksmith, locomotive and car repairing shops. The blast furnace is being remodeled and enlarged. Here, as in Manistique, there is being installed a new cross compound blowing engine. In addition to these improvements there have been over two miles of high and low pressure water lines laid and a new pumping station built. The pumping equipment consists of two motor-driven, two stage centrifugal pumps, having a capacity for delivering 7,000,000 gals. of water per 24 hours. All of the new construction work designed by Mr. Dow is of a substantial nature, the buildings being constructed almost entirely of steel, brick and concrete.

At the other properties very little new construction has been undertaken so far, aside from the relining of the stacks at the Boyne City and Elk Rapids furnaces and the building of ore thawing sheds at Ashland.

The American Shipbuilding Company's Report

The American Shipbuilding Company has issued its annual report for the year ended June 30, 1911. The income account compares as follows:

	1911.	1910.
Net earnings.....	\$954,862	\$1,980,654
Depreciation, maintenance, etc.....	317,644	272,032
Balance	\$637,218	\$1,708,622
Preferred dividend.....	553,000	553,000
Balance	84,218	1,155,622
Additions		271,300
Surplus	\$84,218	\$884,322
*Includes \$100,000 contingent earnings on unfinished construction, year ended June 30, 1910.		

The general balance sheet as of June 30, 1911, compares as follows:

	Assets.	1911.	1910.
Plant and property.....		\$18,531,958	\$17,904,086
Material on hand.....		540,389	510,287
Stocks and bonds.....		968,500	884,400
Uncompleted contracts.....		807,288	821,791
Cash		1,073,616	902,045
Accounts and notes receivable.....		3,198,992	3,907,006
Total		\$25,120,744	\$24,929,615
	Liabilities.		
Preferred stock.....		\$7,900,000	\$7,900,000
Common stock.....		7,600,000	7,600,000
Accounts and notes payable.....		2,088,466	1,166,519
Reserve fund.....		1,052,085	1,259,121
Profit and loss surplus.....		6,480,193	7,003,975
Total		\$25,120,744	\$24,929,615

In addition to the foregoing, there exists a contingent liability from the guarantee of first mortgage bonds on steamships built by the company, aggregating \$1,214,000, and carrying interest.

President James C. Wallace says: "All of the properties of the company have been kept fully up to the standard of condition. During the year there have been completed and placed in operation a 700-ft. dry dock, steel punch shop, building berth and boiler shop at Port Arthur, Canada. Since the opening of the dry dock in the early part of April it has been filled almost continuously with repair work, with favorable prospects of a fair business. The company has built and completed 22 vessels during its fiscal year, and now has under contract eight vessels, one of which is the largest side-wheel passenger steamer ever built. The general conditions prevailing in iron and steel throughout the country and in the business on the Great Lakes have caused the volume of our business to decline in proportion to other industries, and the outlook for the coming year is not favorable for any improving conditions, as the present carrying capacity of our lake marine exceeds the probable tonnage to be freighted, and this is likely to continue until there is a material increase in the demand for iron ore and kindred products."

Dodge Bearings in Long Service.—The Dodge Mfg. Company, Mishawaka, Ind., has received the following interesting letter from Ernest Jackson, engineer, London, Eng., testifying to the lasting service of Dodge capillary self-oiling bearings: "Exactly ten years ago I completed the equipment of a large factory in North London. The whole of the main line shafting and counter-shafting in this factory was fitted with Dodge ball and socket adjustable hangers, with bearings of the capillary self-oiling type. I felt great confidence in these bearings at that time, and the result after ten years' service has only been to increase it. I find that not a single bearing has had to be replaced, neither has a bearing at any time run hot during the whole of the ten years' working. The other day I examined a bearing which has been in use for the whole period and which still shows no appreciable signs of wear."

The Bureau of Navigation of the Department of Commerce and Labor reports that shipbuilding returns for the quarter ended September 30 show a falling off when compared with the corresponding period of 1910. There were 350 sail and steam vessels of 56,217 tons constructed in the United States during the quarter just ended. Last year the number was 376, of 95,137 tons. Of the 350 vessels built in the last quarter 131 were constructed on the Atlantic and Gulf coasts, while 92 were built on the shores of the Great Lakes. The Pacific coast built 70.

The Storage Battery for the Steel Mill

The storage battery in the steel mill to take heavy power fluctuations, leaving the generators to carry approximately the average load and relieving them of the heavy surges common in steel mill work, was described in a paper read before the Association of Iron and Steel Electrical Engineers, at its convention in New York during the week of September 25, by F. H. Woodhull, of the Lukens Iron & Steel Company. In July, 1906, the battery, of 120 cells, made by the Electrical Storage Battery Company, Philadelphia, was installed. After a few months' operation the battery was increased to give it a 1600 amp.-hr. capacity. It has been in almost continual operation, 24 hr. a day for over five years and is still doing good work. It has never been necessary to run the engine to carry the load of the mill on Sundays, the battery taking care of the load from daylight Sunday morning until the time the generators are started up Sunday night. The battery has cost not more than \$700 to maintain; \$40 of this amount, or an average of \$8 per year, was spent for repairs and labor on switchboard, and the remainder, \$132 per year, was expended on the battery.

New Shuster Riveter

A new size of elastic rotary blow riveting machine has been recently placed on the market by the F. B. Shuster Company, New Haven, Conn. The machine has been built in a number of sizes for some time, but this particular one, which was furnished to a chain manufacturer for heading both ends of the rivets used in chains simultaneously, is the first of the $\frac{3}{4}$ -in. size built with the lower revolving fixture. This double heading operation is performed in the same length of time as was formerly required for heading one end of a rivet. Fig. 1 illustrates the new machine, while in Fig. 2 a view is given showing the contrast between this new type and the

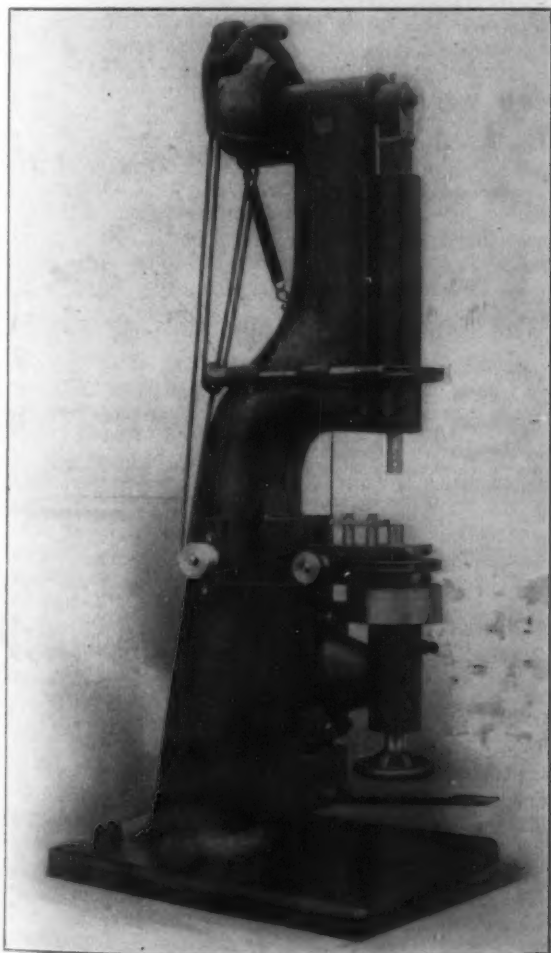


Fig. 1.—The New Elastic Blow Riveting Machine with Lower Revolving Fixture Built by the F. B. Shuster Company, New Haven, Conn.

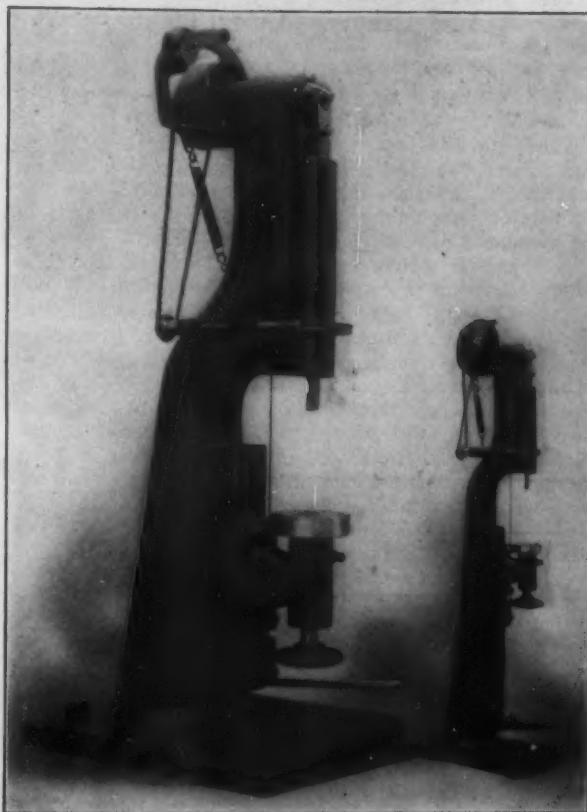


Fig. 2.—View Showing the Contrast Between the New Machine and the Smallest One Built by This Company.

smallest size built by the company which is designed to head rivets 1-16 in. in diameter and smaller.

The rivets are headed by the reciprocating hammer and also by the rotating hammer, which is restrained from moving longitudinally by an anvil carrier bolted to the table, the articles to be riveted being held between the hammers. The most important feature of the machine is the combination and working of the cylinder and hammer rod with the lower revolving attachment. The direct and central application of the power together with the positive rotary motion of the hammer causes a regularly applied breaking down action so that the rivets are turned down evenly on all sides and perfect heads are secured. The lower revolving fixture can be removed if desired and the machine used for heading one end of a rivet. In either way the riveter is adapted for a large variety of work. The machine has few parts, which minimize the chances of its getting out of order.

The contrast between the different sizes of riveters built by this company is clearly brought out in Fig. 2, which illustrates the new machine without the lower fixture and the smallest size of riveting machine built also with the revolving fixture removed. This latter machine is designed to head rivets having a maximum diameter of 1-16 in. The contrast in these two machines is further emphasized by comparing the weights, which are 3000 lb. for the new $\frac{3}{4}$ -in. riveter and about 300 lb. for the smallest size.

The Oeking Company, of New York, has been incorporated to sell the punching and shearing machines manufactured by the Stahlwerk Oeking, of Düsseldorf, Germany, and has opened offices at 50 Church street, New York City. A large stock of machines will be shortly on hand for prompt deliveries in Jersey City, where spacious warehouse facilities have been provided. The management of the Oeking Company is in the hands of the Wiener Machinery Company, which has made a specialty of importing similar machines. The Oeking Works does not depend for its steel upon outside steel foundries, but has a capacity of about 15,000 tons annually of steel castings for its machinery department. All standard sizes are manufactured in series and it is the aim to deliver any machine at once from stock. The Oeking Company will shortly issue an illustrated catalogue which will give a detailed description of the works and of the machines and accessories it makes.

Lamp Hangers for Mill Lights

When mill work, or a great portion of it, must be stopped so that a huge crane requiring great power to operate it can be used to enable the trimmer to get to his lamps, the lighting cost mounts up to an extremely high figure. The lamp trimmer usually ranks with the lowest-priced labor in the mill, so that it is not his time, but the loss of time to the crane, that becomes the basis of the argument against the flaming arc lamp.

The answer to this argument will be found in a thoroughly practical automatic cut-out hanger, which will permit the lamps to be cut out from the electric circuit and lowered to the ground where they can be trimmed in safety and convenience and where this work can be done in such a manner as to increase greatly the life and efficiency of the lamp, regardless of its type or the frequency with which it must be trimmed. If it should become necessary for a crane to pass while a lamp is being trimmed, providing the cut-out hanger is suitably designed, the lamp can be quickly and easily raised, and then lowered again to permit the trimmer to complete his work after the crane has passed.

The foregoing is taken from a paper read before the recent meeting in New York of the Association of Iron and Steel Electrical Engineers by J. E. Thompson, of the Thompson Electric Company, Cleveland, Ohio, maker of lamp hangers. The author showed lantern photographs of the arc lamp hanger made by his company, described in these columns in the issue of August 17. His idea of the proper kind of hanger is one having the line or conductor wires extending straight out from the pole or wall to binding posts in the upper member of the hanger; two pulley wheels so that the strain on the lamp cord is reduced by one-half and so that the cord may be much lighter than is customarily used, although that now in use may be accommodated; and an arrangement so that a short, light pull on the lamp-cord gives an instant release (something in the nature of the snapping of a whip lash), disconnecting the two members of the hanger. The lamp accompanied by the lower member descends. When the lamp is again raised until the two members of the hanger come together they are automatically, both physically and electrically, re-connected. The physical connection is absolutely secure, it is emphasized, so that unless the lamp-cord is given that quick elastic snapping release described, the two members of the hanger will not be disconnected. The hanger is fitted with a top bale which is suitable for attachment to a pipe bracket, truss, cable, ceiling or any other horizontal support.

The Electric Lamp Combination Dissolved

The United States District Court for the Northern District of Ohio has rendered a decree in favor of the Government in the case brought under the Sherman anti-trust law against the General Electric Company and about 35 subsidiaries. In effect the decree orders the company to conduct its business under its own name and directs the dissolution of the National Electric Lamp Company and about 35 subsidiary corporations. The petition was dismissed as to the Kentucky Electrical Company. As the decree was acquiesced in by the companies there will be no appeal.

The General Electric Company must conduct any business in the manufacture or sale of electric lamps in its own name. The practice of fixing a resale price on lamps, whether patented or unpatented, is forbidden and once a lamp has been manufactured by the owner of a patent or his licensee and sold to a wholesale or retail dealer, the price at which the dealer sells to another or to the public is open to free competition. Another provision will make it possible for independent manufacturers of electric lamps to secure the parts necessary for such manufacture without such restraints as heretofore existed.

The defendants get 90 days in which to comply with the general terms of the decree. The General Electric Company is given six months to take over the National Electric Lamp Company of Cleveland.

The General Electric Company through this lamp pool held control of 95 per cent. of the lamp business of the country. It sounds like an oppressive monopoly, and

yet it has been one that has made possible the wonderful development in electric lighting. There was chaos in the lamp business 20 years ago. The lamp pool restored the industry to a commercial basis and this led to wonderful inventions, so that for 16 cents the consumer gets a lamp 50 per cent. more powerful and efficient than the lamp for which he paid 85 cents in 1896.

The Michigan Steel Company

The Michigan Steel Company is being organized with a capital stock of \$1,500,000, to build an open-hearth steel plant in Detroit. Detroit men are back of the project, but it is understood that M. A. Hanna & Co., Cleveland, owners of the Detroit Iron & Steel Company, will be largely interested. On excellent authority it may be stated that the project has reached a point where the building of the plant is practically assured.

The proposed site is a 50-acre tract on the River Rouge near the two stacks of the Detroit Iron & Steel Company on Zug Island. The plan is for the Hanna blast furnaces to furnish metal for the steel plant. The following appeared in the Detroit Free Press last week in regard to the proposed enterprise:

The company will issue \$1,500,000 of stock, and will sell \$1,000,000 of bonds. Arrangements have been completed by which the Union Trust Company of this city and Peabody, Houghteling & Co. of Chicago will jointly underwrite the bonds. The site for the plant has been secured, the plans and specifications for the buildings have been drawn, and bids for the construction of the buildings are about to be opened. It is estimated that it will take about a year to get the plant in complete running order, but all that remains to be done in connection with the preliminaries is to perfect the organization by the placing of the stock and the election of directors and officers.

This work is in the hands of Charles W. Baird, secretary and treasurer of the Detroit Iron & Steel Company, the representative in Detroit of the Hanna interests and the man who has worked up the new project from the start. The stock is not being offered for sale to the general public. It is being placed with a good deal of care and discretion among the capitalists who control the manufacturing plants in the city that are consumers of the grade of steel that the new plant will turn out. The purpose of this is to secure a sure market for the output. It is estimated that Detroit with the territory immediately tributary to it consumes annually between 200,000 and 300,000 tons of steel of the kind that the new plant will manufacture, and it is proposed to turn out at the start about 100,000 tons annually, or something less than 50 per cent. of what the local market calls for.

The American Steel Foundries' Earnings

A financial statement of the American Steel Foundries and its subsidiary companies for the eleven months ended June 30, 1911, has been given out, as follows:

Earnings from operations of plants and net income of subsidiary companies.....	\$618,613
Other income:	
Interest, discount and exchange.....	\$36,028
Income from investments and loans.....	432
Sinking fund profits.....	4,526
Miscellaneous	6,743
	\$47,729
Total income.....	\$666,342
Deduct:	
Interest on debentures.....	\$126,016
Interest on bonds:	
Outstanding	159,234
In sinking fund.....	53,708
Bond sinking fund installment and profits.....	100,776
Depreciation of buildings, plant and equipment (all properties).....	224,814
	\$664,548
Balance, net income.....	\$1,794

Although there has been no marked improvement in business, the company now has more orders on hand than 60 days ago, September having been a particularly good month. Operations are at about 40 per cent of capacity.

The Administrative Council of the National Metal Trades Association held its semi-annual meeting at the Hotel Astor, New York City, October 12. The councilors passed on Commissioner Robert Wuest's report outlining the work done by the association during the year.

Factory Illumination

Reflectors and Their Upkeep

Factory illumination with special reference to cotton mills was made the subject of a paper by J. M. Smith, Cleveland, Ohio, read before the National Association of Cotton Manufacturers, Manchester, Vt., September 29. The following extracts having a general application to shop lighting have been made:

The number of machines lighted by any one unit is somewhat a matter of choice. Large units are more economical as regards cost of wiring, renewals and labor for maintenance. Smaller units are preferable because of a more uniform distribution of light, absence of shadows and more accurate location with reference to the operator's needs. A further advantage of the smaller units is the relatively small inconvenience resulting from the failure of a lamp. If a single lamp illuminates four or eight machines its extinguishment means the idleness and loss of time of many operators and machines. With small units the desired illumination can be obtained with a lower height of suspension than with large ones. This is an important advantage in rooms with low ceilings.

Where tungsten filament incandescent lamps are used, the 60 and 40-watt sizes equipped with intensive reflectors are very popular. Proper light distribution can be obtained from either steel or glass reflectors so that the deciding factors will be considerations of a more commercial nature. In the matter of first cost, the steel enameled reflector will be found somewhat lower. The depreciation due to dust should not be greatly different for the two types. The replacement of glass reflectors in a large factory is found to amount to 3 or 4 per cent. of the total maintenance cost. It is possible to determine easily when a glass reflector has been properly cleaned, whereas the efficiency of a metal type may be considerably impaired without this being easily detected by inspection. Reflectors with a smooth enamel finish can be very easily cleaned in place with a damp cloth. One of the points which has brought glassware into favor is the fact that a very appreciable amount of light passes through the reflectors, lighting the ceiling and walls, giving a more cheerful appearance to the room. In cotton mills, however, there is so much reflection from the brightly lighted goods that a well diffused light is found in the upper part of the room, sufficient to enable repairs to be made on shafting.

Maintenance and Care

The largest item in the upkeep of a system using incandescent lamps is the cost of the lamps themselves. In one large industrial plant this amount is 75 per cent. of the direct maintenance charges. The average effective life of a Mazda lamp depends upon the efficiency at which it operates. The manufacturers rate the lamps at three different operating efficiencies corresponding to the life figures of 1,000, 1,300 and 1,700 hr. The choice of the efficiency depends upon the price paid for power. Where this is purchased at a moderately high rate, it pays to run the lamp at high efficiency, thereby obtaining the most light for the current consumed. Even when the mill has its own lighting plant and energy is cheap, the high efficiency lamps are desirable on account of the better quality of the light.

In order that the illumination will not be materially reduced after the plant has been in operation for some time, the lamps and reflectors should be thoroughly cleaned at proper intervals. A recent investigation in a weave room where dust made conditions as bad as will be found in practice, showed a loss of light of about 10 per cent. per month with both glass and steel reflectors. If by thorough cleaning we eliminate the loss due to dust we can keep the amount of light obtained within a few per cent. of that given by the new installations, the lamp itself maintaining its candle power so well during its rated life that the average will be well above 90 per cent. of the initial value.

The cleaning of the lamps may be done in the most obvious way by providing one worker with necessary step ladder and washing material and taking down each unit, cleaning and replacing it. This, however, is not an economical arrangement, as two trips up and down the step

ladder are required for each reflector, and the man doing the work performs several different operations in succession which wastes time as compared with doing only one thing. Some factories have a man with a ladder put up a clean reflector at the same time he is taking down a dirty one; the latter he hands down to a helper who washes it ready to be placed clean on the next fixture. If the washing takes relatively more time than the removing and replacing of the unit, two persons may be employed at washing. Another arrangement very desirable in a large factory, is to provide a truck holding an extra stock of clean reflectors. These may be put up as the dirty ones are removed to be taken from the room for cleaning.

August H. Tuechter on European Conditions

August H. Tuechter, president of the Cincinnati Bickford Tool Company, Oakley, Cincinnati, Ohio, who recently returned from an extended European trip, on being interviewed by our Cincinnati representative, Charles L. Smith, gave his views of the foreign situation in regard to machine tools as follows:

"The condition of the machine tool business in Germany and throughout Europe, except possibly in one or two countries, is comparatively speaking good. It is not booming, but solid. Undoubtedly the best results are obtained by personal visits to these countries, and a knowledge of the various languages is very beneficial.

"American machine tools are very extensively copied, and with more favorable prices of material and labor the European manufacturers make the competition for the American manufacturers exceedingly keen. Patents in Europe, especially in Germany, afford considerable protection. The smaller trade centers often offer better opportunities than the larger cities, as it is natural that the competition in the larger cities becomes much sharper than in the outlying districts.

"Whether or not many American machine tools are purchased by the European merchants and reshipped to other countries—such as the various colonies, South America and Africa—is hard to say, but undoubtedly there is some business of this kind done. Terms of payment in Europe are about the same as in America, being in some cases very prompt, in others extended over a certain length of time.

"It does appear as if, in view of the immense revival of the machine tool interests in Europe, it will become, and even is already, much more difficult for the American manufacturer to find a market for his product, and this condition will undoubtedly increase and develop strongly as time goes on."

American Iron and Steel Institute

Secretary James T. McCleary has given notice of a special meeting of the members of the American Iron and Steel Institute on October 26 at 30 Church street, New York, for the purpose of voting upon a proposition that the number of its directors be changed from 15 to 21 and a proposition that Section 4 of the Constitution of the Institute be amended to read as follows:

"Section 4.—The Institute shall be managed and controlled by a Board of Directors consisting of 21 members in the manner and subject to the provisions of the constitution and by-laws of the Institute; the directors to be elected as provided in the by-laws, and, if so provided in the by-laws, to be divided into separate classes."

A safeguard for an industrial railroad car is illustrated in the October issue of the Journal of Industrial Safety, published by the Industrial Safety Association, 29 West Thirty-ninth street, New York City. It comprises a flat steel bar extending immediately outside the wheels of the car at a point slightly above rail level so that a workman's foot cannot accidentally get under the wheels. The bar is riveted to drop pieces from the frame of the car and each end is bent to an obtuse angle calculated to shove the foot from a rail and to keep it from the rail once the front wheel has passed the point of danger. Where pressure for aisle space is great and the platforms of cars cannot be made appreciably greater than the wheel base of the car, the protection mentioned becomes more important.

The Besly Disk Grinder

Details of a Machine Recently Developed for Pattern Makers' Use

For grinding flat surfaces on wood, Charles H. Besly & Co., 118 North Clinton street, Chicago, Ill., have placed on the market a new pattern makers' disk grinder. In addition this tool can also be used for jointing, beveling, mitering and finishing woodwork where fine finish, exact angles and accurate dimensions are required, as well as for cylindrical grinding and metal pattern work. It is claimed that with the flat steel disk wheel, the adjustable

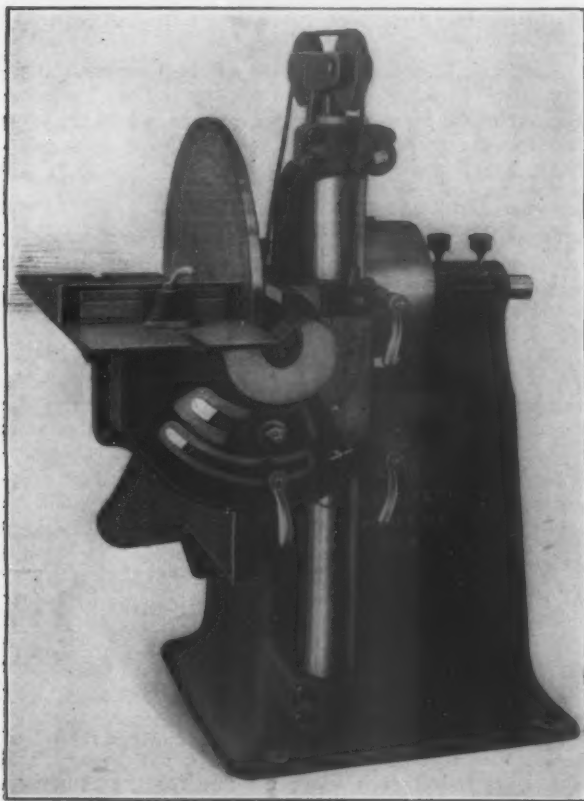


Fig. 1.—The No. 15-30-A Pattern Makers' Disk Grinder Built by Charles H. Besly & Co., Chicago, Ill.

work table and the various attachments supplied, high grade work can be mechanically produced at a great saving in time as compared with the method formerly employed. It is also possible to use cheaper pattern lumber, as hard and soft wood, cross grains, straight grains, knots, shakes, sap and even nails or screws which may protrude to the ground surface can be removed equally well. A large amount of work which has heretofore been classed as trimmer work can be done on this grinder, it is pointed out, while it also does much of the turning and smaller machine planing, as well as a large portion of the sanding, planing, cornering and general hand fitting and finishing work.

Fig. 1 shows one of these grinders equipped with a 30-in. wheel, while the different adjustments of the work table are illustrated in Figs. 2, 3 and 4, the table being locked in the horizontal position in the first, swung out of the way in the second and locked at an angle of 45 deg. from the horizontal in the last. Four attachments are furnished with each machine, namely, the sliding bevel gauge, the sizing circle gauge, the sizing bevel gauge and the angle plate, all of which are illustrated in Figs. 5, 6, 7 and 8 respectively. Fig. 9 shows a typical pattern produced by employing the sliding bevel gauge and tilting the work table.

The Machine in Detail

The grinding is done by sheets of garnet or other abrasive paper, called circles, which are cemented to the faces of steel disk wheels that are generally 30 or 40 in. in diameter and $\frac{7}{8}$ in. thick. As the circles become worn they are torn from the wheel and new ones cemented on. Wrought steel, specially treated to eliminate strains in the metal, is used for the disk wheel. This is machined so as to be practically flat and of uniform thickness throughout within a limit of 0.001 in. The spindle, which is $2\frac{1}{2}$ in. in diameter, runs in bearings having a total length of 16 in. All the wearing parts of these bearings are renewable, and they have inserted bushings of cast iron lined with bearing metal. The bushings are ground on the outer surface and are fitted in bored and reamed holes in the main bed casting. In this way new spindle bearings can be inserted and the original alignment of the spindle preserved, a feature which is important when the finely graduated work table and the attachments used on this machine are taken into consideration, since a slight wear in the bearings would destroy the accuracy of the grinder. Phosphor bronze collars ground all over take care of the end thrust, while the spindle end play is taken up on a single bearing bushing.

The work is supported on an adjustable work table, which is 14 in. wide and 40 in. long, and is brought into contact with the grinding wheel in the correct position. The work table may be tilted and locked at any angle from 75 to 135 deg. from the plane of the grinding disk, large distinct graduations being provided to govern this angular adjustment. The table can be locked instantly at 90 deg. without referring to the graduations. An adjustable circular gibbed bearing located so that its center always remains 1-32 in. from the face of the grinding disk accomplishes the tilting movement. The working edge of the table is on this center and remains near the grinding disk regardless of the angular position of the table top. The work table has a vertical adjustment of 25 in. and may be swung away from the grinding disk for convenience in resetting the wheel or facing off large patterns as shown in Fig. 3. A view of the table locked at an angle of 45 deg. from the horizontal is given in Fig. 4. In resetting the disk wheel it is not necessary to remove the wheel from the machine, the table being simply swung out of the way as shown in Fig. 3. A telescoping dust hood which can be piped to the exhauster for withdrawing the dust made by the grinding process is included in the equipment of the machine. The work table is counterweighted and each adjustment is locked with a single handle nut, thus insuring easy and quick manipulation.

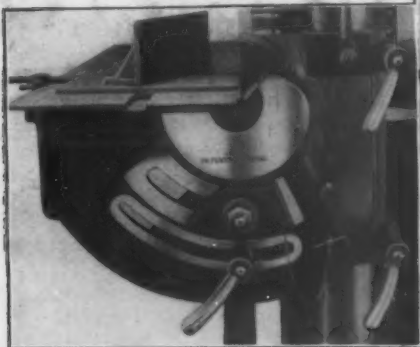


Fig. 2.—Locked in Horizontal Position.

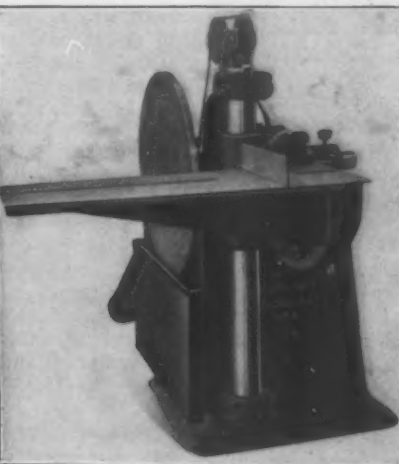


Fig. 3.—Swung Out of the Way.

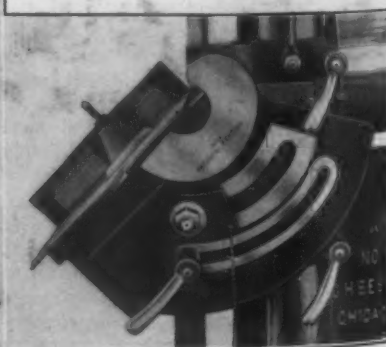


Fig. 4.—Locked at 45 Deg. From Horizontal.

Three Views Showing Adjustments of Work Table.

Work Table Attachments

Four attachments are regularly supplied with each machine and are used in a groove in the top of the work table, which runs parallel to the face of the grinding disk. The sliding bevel gauge illustrated in Fig. 5 is mounted on a bar which slides in the groove in the top of the work table. This gauge is graduated from 0 to 45 deg. on either side of the center and can be instantly adjusted by either right or left hand work. The base of this gauge is a blade having a sliding attachment toward and away from the disk wheel, which enables work to be supported all the way to the grinding disk, regardless of the angular position of the blade. The graduations of this gauge when employed in combination with those governing the tilting movement of the table enable ground surfaces having double angles to be produced at one setting, a typical piece of this nature being illustrated in Fig. 9. The sizing circle gauge, Fig. 6, has sliding movement in both directions on the work table and is drilled to receive center screw plugs on which the work may be rotated to grind cylindrical or conical surfaces. An adjustable stop screw limits the transverse movement so that circular work can be ground to any desired radius and accurately duplicated as many times as may be desired. The holes in the bar are spaced $\frac{1}{2}$ in. apart on centers and are marked with the approximate radius each will generate. The sliding bar is graduated in thirty-seconds so it is a very simple matter for the workman to see what radius the gauge will generate before beginning the grinding operation. The adjustable stop screw has a fine adjustment and can be used in connection with the graduations on the sliding bar to give any desired radius.

The sizing bevel gauge which is shown in Fig. 7 has both longitudinal and transverse sliding movements on the work table. Like the sliding bevel gauge, it is graduated in degrees from 0 to 45 on either side of the center and can be used for right or left hand work, the adjustment being made instantly. The transverse movement like that of the sizing circle gauge is limited by an adjustable stop screw which enables work to be ground to size accurately and duplicated. The angle plate, Fig. 8, is intended to be used where thin work is to be cornered freehand. In this way it is possible for the workman to support his work at right angles with the table top while rounding corners freehand.



Fig. 9.—Typical Pattern Produced by Employing the Sliding Bevel Gauge and Tilting the Work Table.

The grinder can be driven from either an overhead countershaft or from one located below the floor or from an electric motor suspended from the ceiling of the story beneath. The bed casting is slotted so that the belt can pass through where the underneath drive is used and caps are supplied for closing the slots when an overhead countershaft is employed.

A Typical Pattern

The concave hexagonal ring shown in Fig. 9 was made on the grinder in 15 min. This time does not include the work of rough sawing and assembling the different pieces. In the engraving the operator is shown grinding a segment similar to those used in the ring. In producing this piece the work table and the sliding bevel gauge were clamped in the angular positions necessary to grind each surface to the required double angle at one setting. In addition to this piece, it is possible to make numerous other irregular shaped patterns by tilting the work table and using the different attachments supplied with the machine.

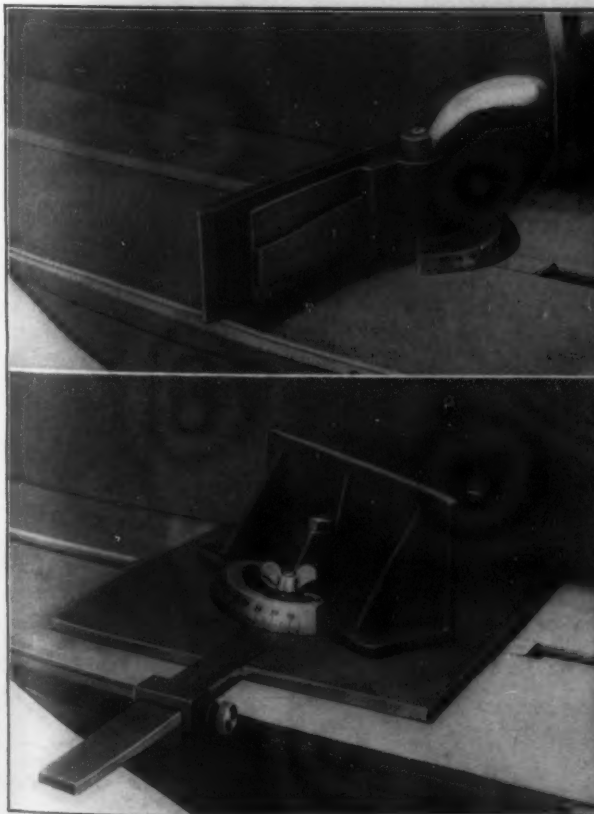


Fig. 5.—Sliding Bevel Gauge.
Fig. 7.—Sizing Bevel Gauge.



Fig. 6.—Sizing Circle Gauge.
Fig. 8.—The Angle Plate.

The Different Attachments Furnished.

The Foundry Drying Oven

Temperature and Rapidity of Operation Are Important Questions

Prof. B. Osann in *Stahl und Eisen*, Vol. 31, No. 30, p. 1219, describes the processes taking place in the foundry drying oven. Only a small portion of the heat actually gets to the objects to be dried by direct contact, most of it being radiated upon them from the walls and roof of the oven. As the gases pass through the oven from the firebox, heat is imparted to the cores and molds therein, as well as to the walls, roof and floor of the oven itself. Naturally the surfaces of an oven will acquire a higher temperature than its contents, for they have no water to evaporate and also have retained the heat of previous firings. So long as there is a difference in the temperatures of the oven and the objects placed therein, radiation of heat to the latter takes place.

There is also a radiation of heat from the incandescent fuel used for firing; and if this is in such a position that it can act directly upon the molds and cores, the action is too sharp, and cracks as well as disintegration of material will result. It is therefore either necessary to interpose a protecting shield of brickwork or sheet iron, or, still better, to bring the heat into the oven by means of a flue.

Water evaporating from the masses of damp sand is taken up by the dry air or gases surrounding them and is carried off. The more readily this can be accomplished the better the drying. The question of temperature is all-important here, for the hotter the air or gases the more water can be taken up, even if the air passed through the grates was saturated in the first place. Drying with air, instead of the gases of combustion, is always more satisfactory, for the firing gases already have a high degree of saturation by moisture. Temperatures required are about as follows: Cores for radiators, 300 deg. F.; loam molds and heavy dry sand work, 575 to 650 deg. F.; cores for malleable casting work, 350 deg. F.; steel molds, 575 to 925 deg. F.

Temperature and Draft

To select the proper temperature for a given object, much judgment should be exercised. Every variety of mold and every thickness has its normal temperature of drying, taking into consideration the time available. Practically a trial is necessary, upon which subsequent lines of procedure can be based. The lower the temperature can be set the less the fuel expenditure as well as danger to the work in hand. Naturally this means extending the time. As this has a limit, it will be necessary to subject heavy molds to a higher temperature than small and thin section ones. Where it is possible to vary the time of drying the temperatures can be kept more uniform. For instance, heavy dry sand or loam molds require from 18 to 36 hours to dry properly, with normal oven temperatures. Pipe cores require only 2 to 3 hours, while for steel molds the custom is to give an hour for every inch of thickness of the mold, with temperatures of about 750 deg. F.

As it is possible to work with strong and with light draft in the drying ovens, it is well to remember the following: The more rapid the change in the air or gases in the oven the quicker the moisture is taken up and removed. The water is first removed from the skin, and capillary action draws the water from the interior to the surface for continuous removal. Now, it is often forgotten that this capillary action cannot take place faster than at a certain rate, and hence it is useless to fire up so strongly that the surface of a mold or core is ruined while the interior is still wet. It is therefore wise to have a very slow action in the case of heavy work, while for pipe cores the more rapidly the atmosphere of the oven is changed the better.

As stated above, practical trials alone will give the desired information. To accomplish this while measuring the temperatures the heated drying oven is provided with an excess of air by regulation of the dampers, and the drying action can thus be noted. The fuel on the grates can also be gradually diminished and thus an excess of air allowed to pass through the bed. Where gas firing is resorted to, the question is still easier, for here there is a choice of two methods: high temperature with changes in

volume which are comparatively small and low temperatures with rapid changes in the oven.

The Effect of Moisture

The question of the time between drying and pouring off also cuts a considerable figure. Where a core is used at once, a damp interior is not so serious a thing; but where it is allowed to stand for a long time any moisture still existing within is drawn to the surface by capillary action and trouble results when molten iron comes into contact with it. This is usually attributed to "drawing moisture from the air," whereas in reality the dry surface of a core or mold is as eager to suck water from the wet interior as would be the case in a dry sponge.

The importance of using a comparatively light facing of loam or green sand in a mold, venting with plenty of coke pieces and backing with dry old sand will be seen from the above. Even sand that is more open is better than a close material, where it is important to dry well.

Tests should be made to note whether a fast drying in the beginning with subsequent slow drying is not preferable to get the best results for a given class of material and work. The whole subject on close study shows how complicated it is and how by intelligent application much money can be saved.

R. M.

The Philadelphia Foundry Foremen

The regular monthly meeting of the Associated Foundry Foremen of Philadelphia, the first since the summer recess, was held at the Manufacturers' Club on the evening of October 10, with Vice-President James Whitehead in the chair. E. F. Lovell, of J. Jacob Shannon & Co.; H. A. White, Stein, Hirsch & Co.; J. I. Fasy, Philadelphia Chaplet Company; M. S. Hare, Harbison & Walker Refractories Company, and R. R. Rutlinger, Davis Collieries Company, all of Philadelphia, were elected to membership. Nominations for officers followed. C. R. Brown, of E. E. Brown & Co., and Thomas G. Smith, Midvale Steel Company, were nominated for president; James Whitehead, Abram Cox Stove Company, and William Butterworth, Penn Steel Casting & Machine Company, Chester, Pa., were nominated for vice-president; M. S. Hare, Harbison & Walker Refractories Company, and D. M. Kittinger, Pencoyd Iron Works, were nominated for secretary-treasurer, and C. J. Krayner, Union Foundry & Machine Company, was nominated for trustee, to serve for three years. An auditing committee composed of Thomas G. Smith, H. Bing and A. A. Miller was appointed to audit the accounts of the committee having charge of the recent outing of the association, while the president appointed a committee consisting of Thomas G. Smith, H. A. White, John Alexander, A. A. Miller, James Whitehead, H. B. Taylor, Jr., George W. Moore and J. I. Fasy, to devise plans for the broadening of the scope of the association's meetings and to report at the next meeting.

The Independent Pneumatic Tool Company, Chicago, manufacturer of Thor air tools, has opened a branch office at 1052-3 Chandler Building, Atlanta, Ga., so as to be better prepared to take care of its increased business in the South. J. J. Keefe, who has been connected with the company several years as Southern traveling representative, has been appointed manager of the Atlanta office. A complete line of Thor tools and parts will be carried in stock for the convenience of customers.

The Henry Souther Engineering Company, 11 Laurel street, Hartford, Conn., has issued a card which gives a table of Brinell hardness numerals in handy reference form for the laboratory, inspection room, superintendent's office or engineer's office. The card is 8½ x 11 in. Copies will be furnished on request, provided that those who apply will state their line of business.

The Goulds Mfg. Company, Seneca Falls, N. Y., reports that its business now is running at only a slightly lower rate than last year, which was the biggest in the history of the company. Its business in hand pumps and small machinery is the biggest it has ever had, but in large power pumps and heavy machinery is slightly lower than last year. As has been the case for several years, its export trade is good and showing a steady increase.

Canada's Titaniferous Ores Used in the United States

The Mines Branch, Province of Quebec, has issued a report on mining operations in that province in 1910. The production of titaniferous iron ore in 1910 is referred to as marking the opening of a new era in the exploitation of these deposits. The opinion is expressed that an important industry will yet be developed. The shipments of titaniferous iron ore from Baie St. Paul last year were 3506 tons. The ore was mined from the extensive deposits of St. Urbain which were worked in the early eighteenth century, but in the past 35 years had shipped very little. A part of the ore mined in 1910 went to the General Electric Company's works at Lynn, Mass., where it entered into the manufacture of electrodes for arc lights. This ore, according to the General Electric Company's analyses, has the following general composition:

	Per cent.
Metallic iron.....	30 to 35
Titanic acid.....	45 to 50
Impurities.....	20

The remaining shipments of the ore mined at St. Urbain went to the Titanium Alloy Mfg. Company at Niagara Falls, N. Y., where it was used in the production of ferrotitanium in the electric furnace.

In the portion of the report relating to iron ore reference is made to the Canada Iron Furnace Company, which operated two blast furnaces, one at Drummondville and the other at Radnor. The ore used is mainly bog iron ore, produced in the vicinity of the furnaces, but a certain porportion of American and Ontario ores is also added. The charges at these furnaces last year consisted of 5987 tons of bog ore, 1615 tons of foreign ore, 3860 tons of charcoal and 839 tons of limestone. The production of pig iron amounted to 3237 tons, valued at \$85,255. Some prospecting for iron ore was carried on at various places in Quebec last year, including work at the Bristol mine and the Spaulding Township iron deposits, and that done on the iron sands of Batiscan. The Bristol mine was first opened in 1872 on lots 21 and 22, range 2, Township of Bristol. After a thorough magnetic survey of these deposits in 1909, E. Lindeman, of the Federal Mines Branch, concluded that very important ore bodies exist on lots 21 and 22. Some extensive diamond drill operations were carried on by Ennis & Co., of Philadelphia, and it is believed the results were satisfactory. Of the Batiscan iron sands deposits, on which work was done by W. J. Chapman, of Toronto, it is stated that the intention is to concentrate the sands. Analyses show that they are much less titaniferous than those of the lower St. Lawrence. The Megantic Iron Ore Company has done some stripping and trenching on its property in Spaulding Township, Beauce County, 12 miles distant from Megantic, and six miles from the main line of the Canadian Pacific Railway. The ore is a hematite mixed with jasper bands.

The American Supply and Machinery Manufacturers' Association

A campaign to increase its membership from 200 to 400 by January 1 has been inaugurated by the American Supply and Machinery Manufacturers' Association. In carrying out its efforts to double the membership the association has divided the country into five territories. A chairman or captain has been appointed for each territory, and under each captain there will be a large number of lieutenants, enlisted from prominent manufacturing concerns that are already members. The campaign is in charge of the bureau of general service of the association, which is under the direction of W. M. Chamberlain, 71 Griswold street, Detroit, Mich.

The association is planning to extend its scope and to make the organization more valuable for its members. Its object and work will be set forth fully in a circular letter that has been prepared and which will shortly be sent out to members and prospective members. "We co-operate for mutual benefit" is a slogan that has been adopted. This slogan will be incorporated into a neat design, which will bear the name of the association and the names of the National Supply and Machinery Dealers' Association and of the Southern Supply and Machinery Dealers' Association.

tion, with which the manufacturers' association is closely affiliated. The emblem will be gotten out in artistic form and will be sent to members for use on their letterheads.

In announcing its plans for making the organization more valuable, the association states that it aims to make the tie between the dealers and the manufacturers stronger, this applying both to the manufacturers that sell direct as well as to those that sell through dealers. The association also aims to encourage greater sympathy on the part of the manufacturers with the problems involving the dealers, and to develop a more generally satisfactory relation between the manufacturers and their dealers. Field committees are being appointed in each locality where the association is active, for the consideration of and action upon problems in which both the manufacturers and dealers are involved. This is practically the grouping of a number of small associations within the parent body.

The present membership has been divided up and classified under 20 heads. Trade committees are being appointed representing each of these separate lines of manufacture to conduct work incidental thereto and to make reports in writing at the annual conventions. A bureau of general service will be maintained to furnish statistics and other information of benefit to members.

Ellwood City, Pa., Gets a New Industry

The Pittsburgh Company, of Ellwood City, Pa., which has been conducting an aggressive campaign for locating new manufacturing plants, has just closed for one new industry and is consummating arrangements for another. S. A. Roelofs, president of the Pittsburgh Company, last week signed the contract under which the Matthews Gravity Carrier Company, of St. Paul, Minn., moves its plant to Ellwood City. The site secured is 200x500 ft., approximating over two acres, with an option on additional land, all of which is located at Tenth street, having connections with the New York Central and Baltimore & Ohio railroads. The new plant will have double the capacity of the old one at St. Paul, being on the two unit plan, while provisions have been made for the third. Plans and specifications are being prepared for the main building, to contain about 20,000 sq. ft. of floor surface, to be of concrete and steel or brick and steel construction. Other buildings will be about 30x80 ft., 40x50 ft., etc.

The Matthews Company manufactures a complete line of automatic elevators, gravity brick carriers, friction chutes, box and shingle carriers, etc., and, besides the American plant, has factories in Toronto, Canada, London, England, and Australia. Much of the material used in its machinery is produced in Pittsburgh and the East, and this with an attractive proposition made by the Pittsburgh Company influenced it to locate where it has. Additional new machinery will be required, all of which will be motor driven, the power being furnished by the Pennsylvania Power Company, an identified interest of the Pittsburgh Company. Work on the new plant will be commenced as soon as possible, and arrangements have been entered into to have it ready for operation in February of next year. The officers of the Matthews Company are: H. L. Jenkins, president; O. C. Sylvester, secretary, and F. E. Moore, treasurer and manager. Mr. Moore will have charge of the Ellwood City plant, and the St. Paul factory will be dismantled. All of the land offered to manufacturers by the Pittsburgh Company has natural gas and water.

Berger Steel Storage Bins.—The Berger Mfg. Company, Canton, Ohio, is manufacturing steel storage bins designed for use in factories, wholesale and retail stores and jobbing houses. Made in the form of a cabinet, the size of the various compartments is adjustable to special needs. The shelves are so arranged that partitions can be adjusted as desired, being easily inserted and bolted in place. The various parts are tied together by means of stove bolts. The bin can be erected with ordinary labor, the only tool necessary being a screw-driver to tighten up the stove bolts. Tests have been made to prove the strength and utility of these bins. One test was the placing of heavy loads in the various compartments of a section, slabs of spelter, averaging 63 lb. each, being used. The total weight of the spelter was more than 7½ tons, and there was no apparent deflection at any point.

Safety Can for Gasoline

A new device designed to prevent the explosion of gasoline, benzine and similar liquids, was demonstrated Wednesday afternoon, September 27, at the Berlin Chemical Laboratory, 558 West 171st street, New York. It is the invention of a German engineer named Langrehr and is intended to be applied to cans and other receptacles employed in the storage or handling of inflammable liquids. Among the various fields in which this can be used are chemical and stove plants, tank cars, automobiles, motor boats, aeroplanes, ships and various types of manufacturing plants where gasoline, benzine, kerosene, alcohol, ether and other inflammable liquids are used. At the present time the Fire Underwriters regulations require that cans or tanks containing liquids of this nature shall

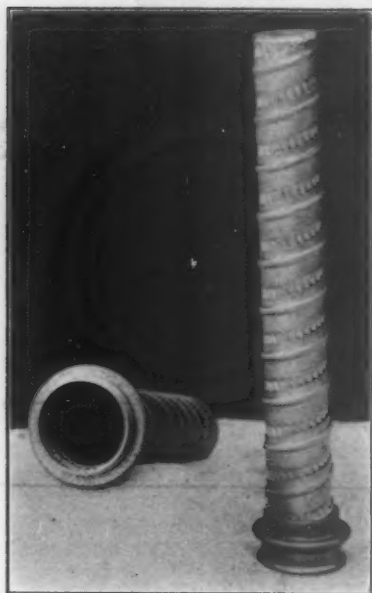


Fig. 1.—The Langrehr Safety Device for Receptacles Containing Inflammable Liquids.

be placed outside of buildings, and as an additional precaution buried in the ground. If receptacles fitted with the Langrehr device are employed it is stated that such precautions are not necessary. The device itself is illustrated in Fig. 1, while a view of two different types of cans equipped with it is given in Fig. 2.

The Langrehr device is an extension of the principle of the Davy mining lamp, the wire gauze giving way to a metal tube, which is fastened to the opening of the can and provides a

channel through which the gasoline or other liquid passes in and out of the container. This tube, as will be noticed, by referring to Fig. 1, is of corrugated metal, wound spirally and perforated, so that the liquid stands at the same level both in the tube and in the can. In the Davy lamp if gas flows through the meshes of the wire gauze surrounding the light there is an explosion, but this is confined within the cage, the gas outside failing to ignite because the wire gauze takes up the heat. In the Langrehr device when the flame is applied to the gasoline can, causing the vapor to ignite, the flame, it is claimed, is not communicated to the can since the tube absorbs the heat and prevents the bulk of the gasoline from becoming ignited.

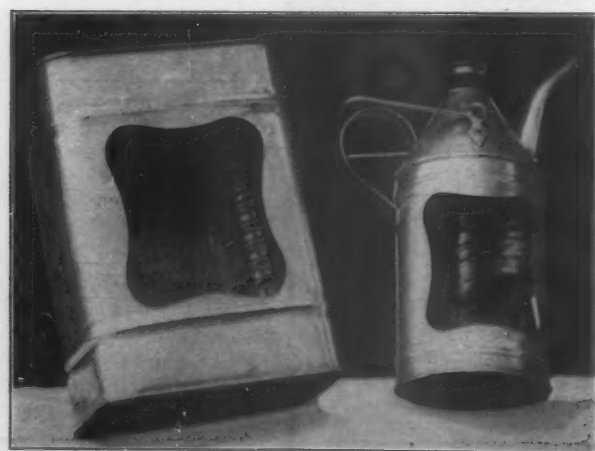


Fig. 2.—Two Types of Cans Equipped with the Langrehr Device.

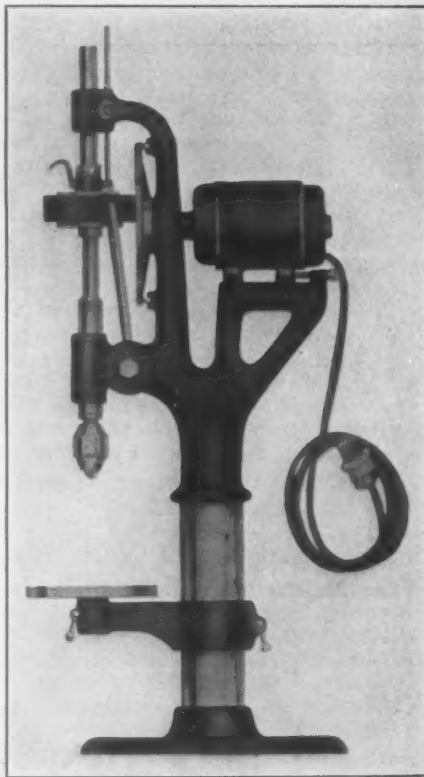
flame into the vessel containing the combustible liquid is impossible. The top of each tube has a screw cap of soft solder, and it is stated that if a fire should reach a storehouse containing cans or tanks of gasoline fitted with these devices, the tops would melt away before the vessels were greatly heated, thus exposing the gasoline in tubes to the flames. This liquid would burn until the tubes were empty, but the bulk of it in each can would be protected and its vapors would not explode.

One of the experiments performed at the demonstration was the ignition of gasoline in a round can similar to that shown at the right of Fig. 2 at the center opening. A rubber hose was attached to the spout and an effort made to produce a flare-back, but this was not successful. Another experiment consisted of pouring benzine which had been previously ignited into a second can with the result that no explosion took place.

Portable Electric Bench Drill

Rapid and accurate small tapping operations are specially claimed for a new portable electric sensitive bench drill being placed on the market by the Hisey-Wolf Machine Company, Cincinnati, Ohio. Emphasis is also placed on the sensitiveness of the tool which tends to reduce the breakage of twist drills to a minimum.

The spindle is of high grade steel and is counterbalanced by an inclosed spring and has ball thrust bearings. It is regularly fitted with a 1/2-in. chuck, but a No. 1 Morse taper socket can be furnished if desired. The column and all the working parts have a ground finish. The spindle drive is by a small friction disk which can be easily shifted across the center of the driving disk by a lever. This special arrangement it is pointed out makes the tool very



A New Type of Portable Electric Sensitive Bench Drill Built by the Hisey-Wolf Machine Company, Cincinnati, Ohio.

handy for small tapping since the spindle is reversed instantly. Automatic compensation for wear is also said to be secured by the friction disk drive and a uniform speed varying from 400 to 975 r.p.m. is maintained at any position of the spindle.

The table which is 12 in. in diameter is adjustable for angle drilling, and can be easily detached from the supporting arm that can be adjusted vertically on the column. The total height of the drill is 35 in.; the maximum distance between the spindle and the table, 12 in.; the spindle travel, 9 in., and the total weight 120 lb.

The tool is made for alternating and direct current and the driving power can be obtained from an ordinary lamp socket.

The McGowan Duplex Pump

With a view to increasing the efficiency and reducing the cost of maintenance, the John H. McGowan Company, Cincinnati, Ohio, has recently made several improvements in its line of duplex pumps. In doing this new patterns of boiler feed and tank pumps were brought out. Among the advantages claimed for the new design are the ability of the pumps to operate at full stroke with ease and quietness at the highest speeds required by this class of machinery, as well as a special type of crosshead, rocker arm, packing box and adjustable water piston. Exterior and sectional elevations of the pump are given in Figs. 1 and 2 respectively, while Fig. 3 illustrates the spool type of crosshead used.

Referring to Figs. 1 and 2 it will be noticed that the frame connecting the steam and the pump ends is of a straight three-section pattern which is open at the bottom, a feature which gives an enlarged working space for gland adjustment. The pump cylinders are brass lined and the pistons are of the adjustable head and follower type, packed with square fibrous packing. Brass valve seats

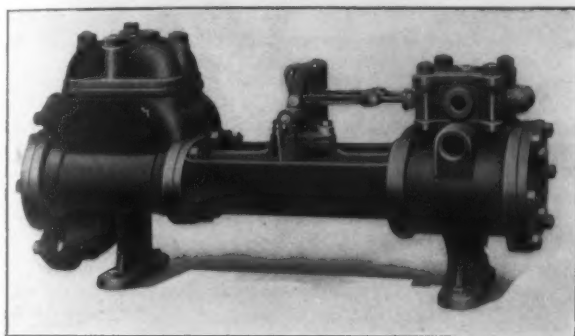


Fig. 1.—The New Duplex Boiler Feed Pump Built by the John H. McGowan Company, Cincinnati, Ohio.

of standard form are used and are secured in place by a fine thread. The valves are held in place by bronze stems and springs and were designed with special reference to the service to which the pump is to be subjected. The steam cylinders are bored to uniform size and the steam valve piston and all parts throughout are made to a standard to insure duplication of parts.

Cast brass is used for the packing boxes on both the piston and the valve rods, and these are screwed in place by fine threads. The boxes for the pump and piston rods are screwed into the forward head of the cylinder which dispenses with a gasket between the frames and the pump body. Another advantage of this packing box is the doing away with the use of sheet packing and the use of packing box studs and nuts. Cast brass nuts highly finished and fitted with swivel glands are used for the piston and valve rod packing boxes. The outer end of the swivel gland is spun within a recess of the packing nut, so that it can be adjusted or withdrawn from the packing box by the movement of the nut without disturbing the packing. One of the special features claimed for this arrangement is that binding of the piston rod is eliminated.

The crosshead, which is illustrated in Fig. 3, together with the rocker arm, is of the spool form which permits a complete rotary motion of the piston and eliminates to a large degree the uneven wear within the cylinders

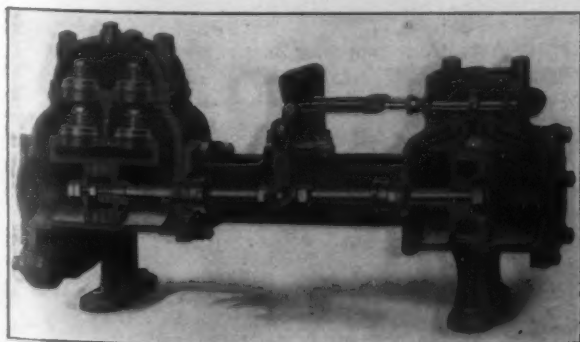


Fig. 2—Sectional View.

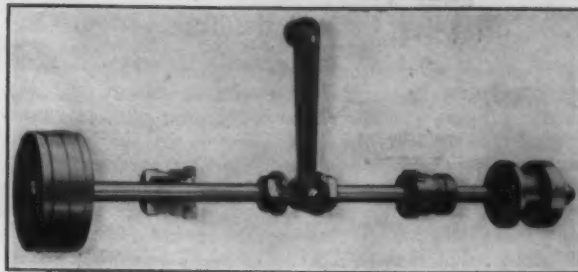


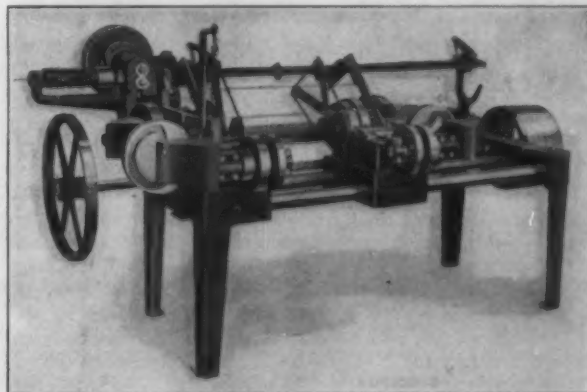
Fig. 3—The Spool Type of Rotary Crosshead Used.

caused primarily by the lack of movement in the square or fixed crosshead. Renewable crosshead wipers are provided for the rocker arms which avoid the expense replacing or refitting the rocker arms.

The boiler feed pumps are designed for pressure up to 200 lb. per square inch and are made in a number of different sizes. These pumps when operated at the proper speed will feed boilers ranging from 50 to 2400 hp., based on the standard boiler rating of 30 lb. of water evaporated per horsepower per hour. In addition to the boiler feed pumps, general and low service pumps, which are fitted in the same manner as the boiler feed pumps, are built, which have capacities ranging from 0.435 to 4.913 gal. per stroke of both cylinders.

Wire Twisting Machine

For forming wire ties of any length from 7 to 48 in. the Wire Specialty & Machine Works, South Bend, Ind., has placed on the market an automatic wire twisting machine. In operation the machine is entirely automatic and takes wire from the coil, cuts it to length and forms a loop at each end. This automatic forming of the tie is done by having the wires, after they have been straightened and



A New Machine for Twisting Wire to Form Loops Built by the Wire Specialty & Machine Works, South Bend, Ind.

cut to length, fall on a carrier which feeds them to the two revolving heads which form up the eye and make six twists at each end.

The length of the tie to be formed can be varied from 7 to 48 in. and the variation is secured by adjusting the position of the movable head shown in the center of the machine in the accompanying engraving. This head slides on the two shafts and can be loosened and moved to any desired position readily. Loops of different shapes can be made on the ends of the wire since the equipment of the machine includes two sets of tools, one for forming an oval loop, and the other a round loop.

A decision has been handed down by Chancellor Haynes denying the Sanford-Day Iron Works, Knoxville, Tenn., a preliminary injunction to restrain the Enterprise Foundry & Machine Works, Bristol, Va.-Tenn., from the use of the name Whitney in connection with the manufacture of mine and other car wheels.

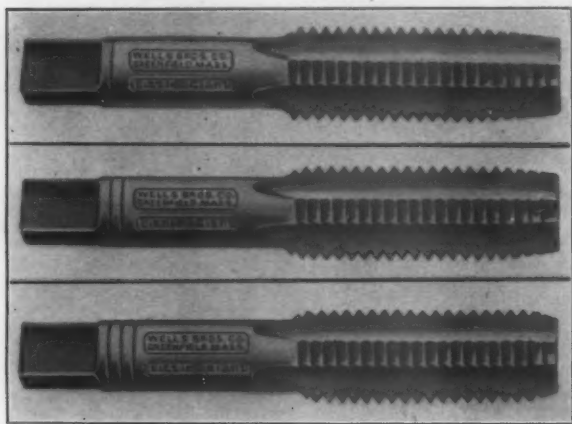
The Marion Shovel & Dredge Company, Marion, Ohio, has changed its name to the Marion Osgood Company.

Little Giant Serial Taps

With a view to distributing the work of tapping a hole more equally among the three taps of a set than is possible with the ordinary practice of using the taper, the plug and the bottoming taps in the order named, the Wells Bros. Company, Greenfield, Mass., has added an improved type of taps to the Little Giant line. The tools have been given the name Serial taps since they are made in sets of three, the different ones having rings on the shanks to designate them so that they may be picked out easily even when covered with oil.

The nominal size of the hole is cut by the No. 3 tap only, which is different from the old-style tool. The No. 1 tap does only a small part of the work since it is much smaller than the No. 3 in both outside and pitch diameters. The No. 2 tap approaches the size of the hole more closely but is still undersize. The function of this tap is to increase the size of the hole so that the last tap used, the No. 3, has relatively little to do except to remove a few thousandths of an inch of material, smooth up the thread and bring it to its exact size. The work of tapping the hole is distributed among the three taps as follows: No. 1 does 54 per cent. of the cutting; No. 2, 30 per cent., and No. 3, 16 per cent.

In designing these taps a number of experiments were made to secure the proper proportions and a special ma-



A Set of the New Little Giant Serial Taps Made by Wells Bros. Company, Greenfield, Mass.

chine was designed and built to record the amount of power required to drive the various numbers of the taps. The results of these tests tended to show that the power required to drive a No. 1 tap was 53 per cent. of that necessary for the old-style taps, while for the No. 2 tap 49 per cent. was required, and only 26 per cent. was necessary to drive the No. 3 tap. It was also found that when properly proportioned the serial taps have a factor of safety of seven, while an old-style plug tap might have a factor of safety of only two.

Where taps are required to work wrought iron, steel and all tough materials in which severe service is demanded these taps are especially desirable since in dividing the work between them each tap has a proportionate amount to do and this results in less breakage than was the case with the taps formerly used. These taps are made to meet particular needs. For tapping through open holes each tap of the set is tapered five or six threads, but if the thread were to extend to the bottom of the hole the No. 1 tap is tapered six threads; the No. 2, four threads, and the No. 3, two threads. These taps are furnished in sizes ranging $\frac{1}{4}$ to $1\frac{1}{2}$ in. in diameter for cutting 20 to 6 U. S. standard threads per inch, and can also be furnished in any regularly listed machine screw or hand tap size. Left hand threads are special and can be furnished at a slight extra cost.

The Society of Chemical Industry, New York Section, will hold its next meeting at Rumford Hall, 50 East Forty-first street, New York, on Friday evening, October 20. Among the features of the programme will be an address on "The Facilities for Industrial Research," by M. C. Whitaker, and an illustrated lecture on "The Manufacture and Performances of the Edison Storage Battery," by Howard Lyon.

The Tisco Manganese Steel Chain

The Taylor Iron & Steel Company, High Bridge, N. J., in response to numerous inquiries for a chain that would stand up under severe service, has within the last few years entered into the manufacture of the standard types of chain in manganese steel. As compared with the ordinary iron and steel chains the manganese chain is said

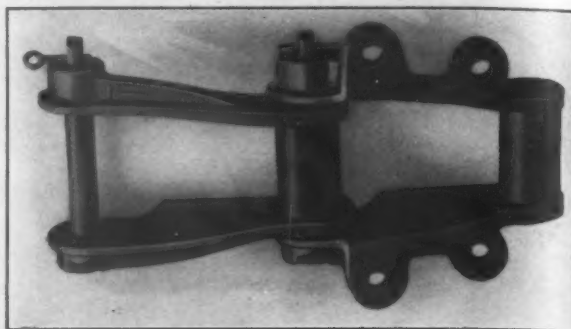


Fig. 1.—The No. 800 Series Chain with K-2 Attachment, as It Is Made in Manganese Steel by the Taylor Iron & Steel Company, High Bridge, N. J.

to last longer, especially in handling gritty and abrasive materials. It has resulted in reducing the items of breakage or renewal of equipment, so that in spite of its higher initial cost the new chain is cheaper in the long run. Two of the different types of chains made are illustrated, Fig. 1 being the No. 800 series chain and Fig 2 the combination or Hercules type.

The detachable type of chain was the first to be perfected in this material. On account of difficulties encountered in casting it was not practical to make any smaller size than the No. 88, but this size and the larger ones are now on the market. Many special chains are now being made, and practically all of the standard types for conveying and elevating work can also be procured. Sprockets or traction wheels are made in manganese steel for all of the various types of chains, and the results secured are said to be fully as good as those obtained from the chain.

In the past chain elevators in cement plants have in a number of cases worn very rapidly because of the abrasive action of the clinker handled. In some cases it has

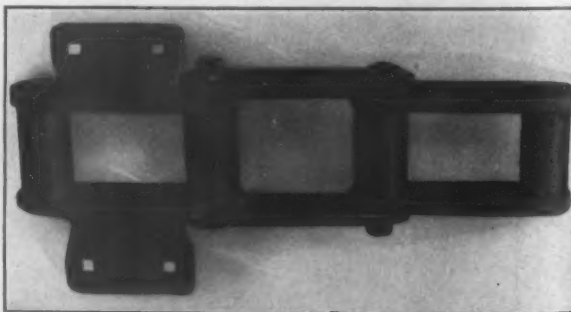


Fig. 2.—The Combination or Hercules Type of Chain.

resulted in a breakdown which allowed the entire elevator to fall into the shaft, while if this did not occur the chain had to be renewed frequently, with the result that the cost per unit of finished product was increased. One cement mill in the Middle West has had six hot clinker elevators equipped with manganese steel chains for about two years, and at the present time they are said to have shown no appreciable wear, only having worn bright in the places exposed to flexure, although the malleable chain which they replaced wore out in some 6 to 10 weeks. Other installations where this chain is said to have given satisfactory service are in steel mills where they are employed for draw chains working under heavy tension and in sand, gravel, rock, coal, ore and ash handling plants.

The Steel Company of Canada is building a new fire brick stove at its Hamilton, Ont., blast furnace plant. Frank C. Roberts & Co., Philadelphia, are the engineers.

Aerial Camera

For taking bird's-eye view photographs, Woodbury & Co., Worcester, Mass., have developed an unusual photographic apparatus. Fig. 1 is a view of the apparatus with the camera 125 ft. in the air, while Fig. 2 is reproduced

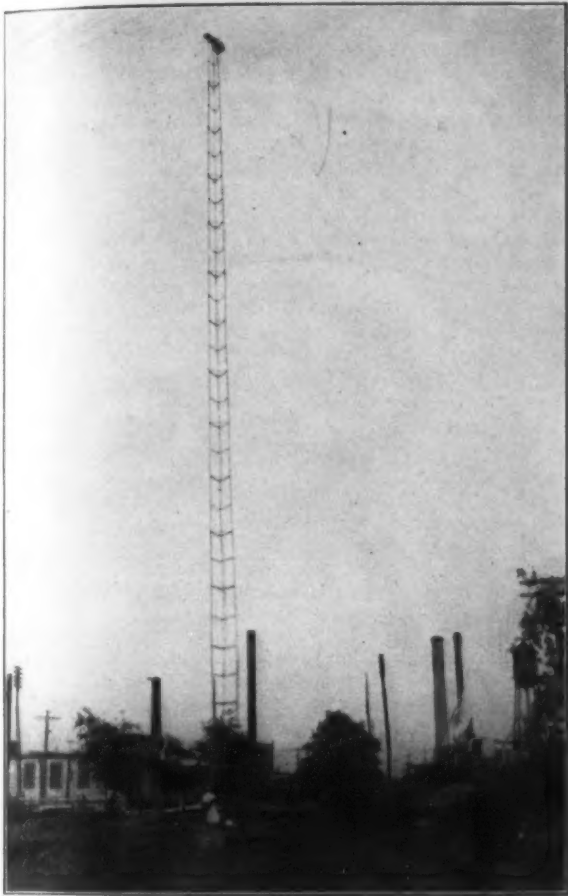


Fig. 1—A New Aerial Photographic Apparatus Built by Woodbury & Co., Worcester, Mass.

from an 11 x 14 in. photograph of the works of the Brown & Sharpe Mfg. Company, Providence, R. I., which was obtained by its use.

The device consists of a light triangular tower with apparatus for raising and lowering a camera and holding it in position at the top. The tower is constructed in sections which are designed to give ample rigidity when

erected to hold an 11 x 14 in. camera so as to take a very sharp negative. When taken down the sections telescope into such a small space that the whole can be conveniently shipped by express or freight. In Fig. 1 the tower is extended so that the camera is 125 ft. above the ground. When the tower is in position the camera is drawn over the pulley and locks in position on the holder. Electricity is employed to operate the shutter in taking pictures.

The Louisville Steel & Iron Company

The old Louisville Bolt & Iron Company, at Louisville, Ky., is to be revived under the name of the Louisville Steel & Iron Company, formed of new capitalists who propose to commence the establishment of one of the few sheet steel manufacturing plants in the South. George H. Holzbog, of Jeffersonville, Ind., across the Ohio River from Louisville, is now promoting the organization of a \$400,000 company, articles of incorporation for which will shortly be filed in Indianapolis, Ind. The plant to be revitalized covers about seven acres of ground in Jones street in South Louisville. F. W. Bonnte was president of the old company, which moved from Anderson, Ind., to Louisville in 1900 and operated a bar-iron mill successfully for some time. The capital stock was increased to provide for the installation of a sheet mill, and after the equipment for this department had been secured and installed the funds gave out and the plant was closed down. Mr. Holzbog then purchased it at a reasonable figure and has been waiting an opportunity to revive the industry.

It is proposed to completely renovate the works, overhauling the old machinery and installing a considerable quantity of new equipment. It is the purpose of Mr. Holzbog and his associates to establish a mill which will have a capacity of 25,000 tons of sheets per year. No definite announcement can yet be made as to the date when the works will be started in operation.

The Testing Society's Year Book.—The Year Book for 1911 of the American Society for Testing Materials is an octavo volume of 385 pages. It contains all the standard specifications adopted by the society, also selected specifications from miscellaneous sources, together with the usual lists of members, committees and officers, a summary of the proceedings of the 14th annual meeting and the annual report of the executive committee. The selected specifications include those for steel railroad bridges prepared by the American Railway Engineering Association; the structural steel, the special open hearth plate and rivet steel and the Bessemer steel rail specifications of the Association of American Steel Manufacturers; also the specifications of the United States Steel Products Company for Bessemer and open hearth steel rails.



Fig. 2—View of the Brown & Sharpe Mfg. Company's Plant Taken with This Apparatus.

Crucible Steel Company of America

Annual Report for the Fiscal Year Ended August 31, 1911

The eleventh annual report of the Crucible Steel Company of America, Pittsburgh, presents the following comparative profit and loss account:

	1910-11	1909-10
Gross sales	\$15,902,139.00	\$18,782,729.24
Operating charges:		
Manufacturing cost	10,572,038.83	12,549,952.50
Repairs and maintenance	719,031.76	812,751.01
Administrative and general expenses	303,714.32	307,629.88
Selling expenses	829,422.06	741,404.56
Taxes	128,234.94	125,253.30
Commercial discounts and interest	122,580.70	149,423.40
	12,675,022.61	14,686,414.65
Provision for depreciation	599,473.46	500,000.00
Provision for contingencies	32,504.57	72,912.53
	13,307,000.64	15,259,327.18
Net manufacturing income	2,595,138.36	3,523,402.06
Other income	134,627.87	25,943.44
	2,729,766.23	3,549,345.50
Interest:		
Dividend scrip	73,309.50	12,218.25
Bonds of subsidiary companies	98,938.38	
Purchase money mortgage		1,245.02
	172,247.88	13,463.27
Net profits applicable to dividends	2,557,518.35	3,535,882.23
Cash dividends on preferred stock	1,730,277.50	1,802,191.87
Undivided earnings for the year	827,240.85	1,733,690.36
Add previous surplus	2,448,039.55	3,157,999.19
		4,891,689.55
Scrip dividend (10%)		2,443,650.00
Total undivided surplus as per balance sheet	\$3,275,280.40	\$2,448,039.55

The balance sheet, as of August 31, 1911, is as follows:

Assets.	
Real estate, plant, equipment, good will, trademarks, etc.	\$44,758,515.54
Investments in and construction advances to associated companies	3,511,294.64
Cash and accrued interest in hands of The Union Trust Company, Pittsburgh, trustee of Atha Works Improvement Fund	385,046.84
Current assets:	
Inventories of raw materials, manufactured products and stores ..	6,186,708.17
Taxes and insurance, unexpired, etc.	53,342.32
Investments	200,569.09
Bills receivable	28,636.31
Accounts receivable (less reserve) ..	2,117,429.66
Cash in banks and on hand	1,188,877.27
	9,775,562.82
Total	\$58,430,419.84
Liabilities.	
Preferred stock	\$25,000,000.00
Common stock	24,578,400.00
Dividend scrip due June 30, 1920, less held in treasury	2,242,487.00
Current liabilities:	
Bills payable	1,577,500.00
Accounts payable	949,775.33
Interest and taxes accrued	68,451.81
	2,595,727.14
Reserve funds:	
Depreciation and renewal of plants (unexpended balance)	540,263.52
Fire insurance	148,261.78
Contingent	50,000.00
	738,525.30
Surplus:	
Net profits for the year ending August 31, 1911	2,557,518.35
Deduct four cash dividends on preferred stock*	1,730,277.50
	827,240.85
Add surplus as of August 31, 1910 ..	2,448,039.55
Undivided surplus August 31, 1911	3,275,280.40
Total	\$58,430,419.84

* August 31, 1914, the unpaid dividends accumulated on the preferred stock aggregated 17½ per cent, of which 1¾ per cent was paid September 30, 1911.

From the accompanying statement signed by Chairman Herbert Du Puy and President C. C. Ramsey the following extracts are taken:

The net profits applicable to dividends were \$2,557,518.35, equivalent to 10.23 per cent. on the preferred stock. These profits are determined after charging against operations of the year \$719,031.76 for repairs, \$599,473.46 for depreciation and renewal of plants, besides \$32,504.57 for contingencies.

Although the gross earnings for the year, \$4,080,776.02, are very gratifying, the plants are still contending with the economic difficulties of fluctuating activities which have prevailed in varying degrees since the depression of 1907. The production of the year in tons was 69 per cent. of that of the previous year, though sales were 85 per cent. based upon the same comparison. This shows that, although the output for the year was considerably less in tons, the standard of quality of material shipped was much higher.

The undivided surplus, represented by quick assets derived entirely from operating profits, after the payment of the preferred dividend of 7 per cent. per annum, \$1,730,277.50, was \$3,275,280.40, as compared with \$2,448,039.55 in the preceding year, being an increase of \$827,240.85 for the current year.

At the beginning of the year there were unfilled orders on the books of the company of 115,936 tons, and at the end, 92,113 tons. Not in any single month during the year did the receipt of orders represent normal mill capacity, which made it very evident that retrenchment was necessary to meet the decrease in business. One of the company's plants, the Aliquippa Steel Works, was therefore closed, and its orders were divided among the larger works, with a resultant economy, as a whole, in the cost of plant operation.

The company's plants are being maintained in the highest state of efficiency. To accomplish this, there has, during the past year, been expended \$719,031.76 for maintenance and upkeep, all of which has been charged against income as a part of current expenses. In addition to this large sum, the directors have set aside out of profits the usual sum of \$500,000 to cover depreciation and renewal of plants of the parent company, and an additional \$99,473.46 for that of the subsidiary companies.

To reduce fuel costs, the directors, during the year, purchased, at a cost of over \$1,600,000, some 2025 acres of the best coking and steam coal property in Greene County, Pennsylvania. In part payment for this large investment the company deeded in fee the remaining portion of the Howe-Brown Steel Works, Pittsburgh, Pa., the ground of the old Canton Steel Works, Canton, Ohio, and a piece of unimproved land on the Monongahela River south of West Elizabeth, Pa., all of which were unproductive. To operate this new coal purchase a subsidiary corporation was formed, known as the Crucible Coal Company, all of whose capital stock is owned by this company. At the site of this new purchase active construction is now going on to enable the company to produce fuel in large quantities some time during the year 1912.

In addition to this fuel operation the company purchased in March, 1911, the blast furnace plant of the Midland Steel Company, located on 423 acres of the most desirable building ground on the Ohio River, in Beaver County, Pennsylvania, some 36 miles below Pittsburgh. On this site, in connection with the blast furnace already in operation, is now being erected the most modern and economical plant for the production of the raw materials to be used in the Pittsburgh plants, the plan to be pursued being that the boats carrying coal for coking to the Midland Works will carry billets and metal to the Pittsburgh plants on their way back to the mines. The Crucible Steel Company of America owns the entire capital stock and manages it as a subsidiary company. To provide for the large improvements now being erected upon this site, the Pittsburgh Crucible Steel Company has made a bond issue of \$7,500,000, the principal and interest of which are guaranteed by this company.

During the year plans were developed calling for the enlargement of the Atha Works at Harrison, N. J., through the addition of an electric steel plant to be operated by the low pressure turbine system, the erection of a new office and other considerable buildings necessary properly to take care of the growing business of that mill. These improvements will be finished by the end of the current year, when the results should show greatly improved earnings.

The contracting of convict labor in Oregon came to an end September 30, when the Lowenberg & Going Company, which has operated a stove foundry at the penitentiary at Salem, Ore., for over 20 years, was notified to remove its property from the prison, and the contract for this year was broken off.

The Caldwell Air Compressor

An air-cooled air compressor employing the same cooling principle as that used in an air-cooled automobile has been placed on the market by E. R. Caldwell & Co., 34 Hilton street, Bradford, Pa. These compressors were built to supply the demand for a small but substantially built compressor having a smaller capacity than the machines usually furnished. Cooling the compressor by air possesses the advantages of greatly reducing the installation cost since no water tank or water pipe connections are



Fig. 1.—An Air-Cooled Air Compressor Built by E. R. Caldwell & Co., Bradford, Pa.

required and the danger of freezing in winter is also eliminated. Fig. 1 is an exterior view of one of the double-cylinder machines, while Fig. 2 is a sectional elevation showing some of the constructional details.

Six sizes of compressors ranging in capacity from 4 to 25 cu. ft. of free air per minute are built. The three smaller sizes, which have capacities of 4, 6 and 12½ cu. ft. per minute, are single-cylinder machines, while the remaining three, which are double the capacity of the single-cylinder compressors, have two cylinders. The cooling

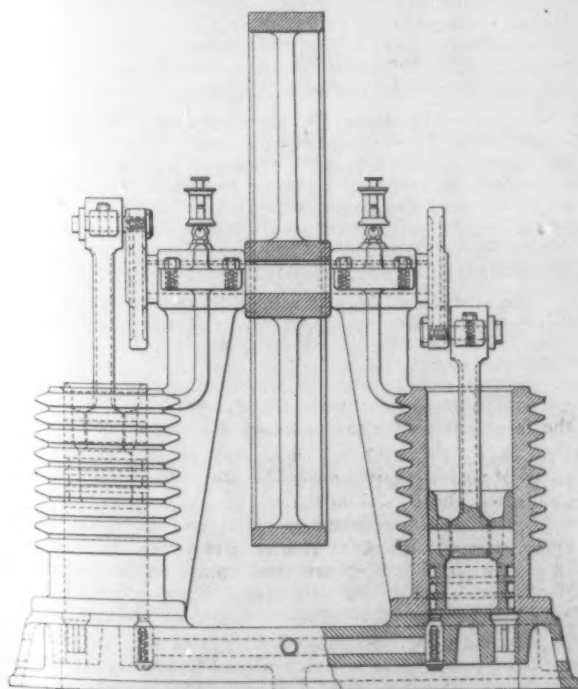


Fig. 2.—Sectional View of the Compressor.

principle employed is the same as that used for cylinders of air-cooled automobiles and the compression cylinders of the air-brake system installed on locomotives. These

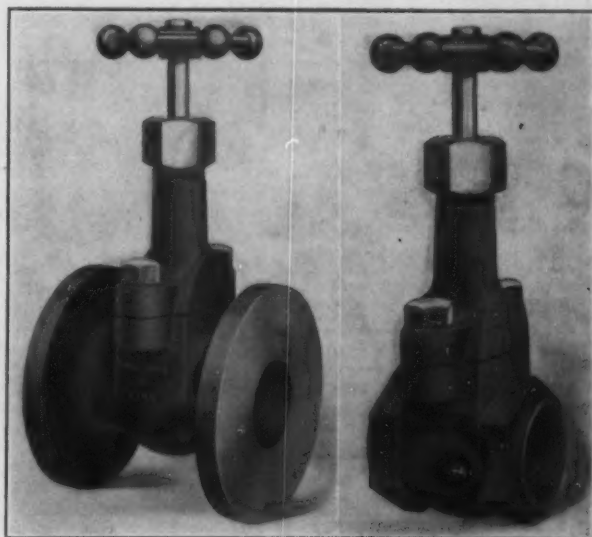
compressors are driven by a belt from any available source of power at a speed of 200 r.p.m.

As will be noticed by referring to Fig. 2 the construction of these compressors is simple, the inlet and outlet valves being located in the base of the cylinders. The former operates by suction, opening very readily and giving easy access to the cylinders. The outlet valve, which is of the spring type, relieves the cylinder readily when necessary. In the design of these compressors an effort has been made to reduce the amount of clearance at the ends of each stroke to a minimum.

The efficiency of the cooling system can be judged from the fact that after a 10-hr. run against the pressure of 200 lb. an excessive amount of heat was not developed.

The Cino Iron Body Gate Valve

Double disk construction is the special feature of the new Cino iron body gate valve which has been recently brought out by the D. T. Williams Valve Company, Cincinnati, Ohio. The double disk construction is to enable the valve to take pressure from either side, and it is pointed out that on account of its rigid construction it is not in the least affected by the severe strains of expansion, contraction and the sagging of pipe lines. Two bronze disks with a ball and socket bearing at the center are employed. These are guided and held in position by the malleable-iron disk holder with lugs on either side which travel in corresponding grooves in the body. This forces the disks into place, causing them to conform to the taper of the seats, and thus insuring even contact and a tight seat bearing. It is claimed for these disks that due to their careful



The Two Styles of Cino Iron Body Gate Valves Made by the D. T. Williams Valve Company, Cincinnati, Ohio.

machining and fitting they are self-adjusting and will neither stick nor bind.

Hard cast iron of high tensile strength is used for the body and hub, while the stem and the disks are of high grade steam material. The hub is bolted to the body and the joint is packed. Ample space for repacking the stem is afforded the large bronze packing nut. The wheel is secured to the stem by a brass lock nut.

These valves are regularly furnished with brass mountings and either screwed or flanged ends, but if desired can be constructed entirely of iron for use in cyanide plants, and ammonia lines or for any service where the liquids would ordinarily corrode the regular brass mountings. They are guaranteed for 100 lb. pressure.

The E. Killing's Molding Machine Works, Davenport, Iowa, announces that English letters patent have been granted to Mr. Killing on his multiple cylinder jarring machine, in addition to the French and American patents already awarded to him, and that other foreign patents are still pending.

The Lehigh furnace of the New Jersey Zinc Company, at South Bethlehem, Pa., which has long been out of blast, will probably not be operated again.

Judicial Decisions of Interest to Manufacturers

ABSTRACTED BY A. L. H. STREET

Liability for Injury to Trespassing Child.—An iron works concern is not liable for injury to a child who while playing and attempting to alight from a window sill fell against the lever of a punching machine, thus setting it in motion, where the machine was on a platform and partly surrounded by a railing. (New York Supreme Court, Appellate Term; *Ziegler vs. Friedman & Gordon Iron Works*, 127 New York Supplement, 457.)

Remedy of Seller on Buyer's Refusal to Accept Delivery.—When a contract buyer of articles refuses to accept delivery the seller is entitled to store them and sue for the price. (New York Supreme Court, Appellate Term, *Day vs. Lowenstein*, 129 New York Supplement, 25.)

Time for Delivering Articles Sold.—When an agreement for sale leaves delivery to be made on notice by the buyer, the seller has a reasonable time in which to make it after receiving notice. (Arkansas Supreme Court, *Brownfield vs. Dudley E. Jones Company*, 136 Southwestern Reporter, 664.)

Waiver of Seller's Right to Replace Machinery Warranted.—Where the seller of machinery, in suing for the price thereof, claims that the machinery complies with the contract, and the buyer relies on a breach of warranty, the seller cannot recover on the theory that the contract permitted him to replace, no request for permission to replace having been made. (Michigan Supreme Court, *Peerless Motor Company vs. Linn*, 131 Northwestern Reporter, 131.)

Buyer's Right Under Warranty.—Where machinery is sold f.o.b. the seller's warranty of its condition does not extend to damage done in transit. In such case the title vests in the buyer on delivery to the carrier. If the contract of sale requires the buyer to test the machinery within 30 days after its receipt and to give notice of any defects, the giving of such notice is a condition precedent to the buyer's right to assert a breach of warranty. (Arkansas Supreme Court, *Southern Engine & Boiler Works vs. Globe Cooperage & Lumber Company*, 136 Southwestern Reporter, 928.)

Priority of Conditional Seller's Rights.—When machinery is sold under reservation of title in the seller until payment of the purchase price it does not become part of the real estate of a third person to which it is affixed as to such person nor as to the rights of an existing mortgagee of the land. (New Jersey Court of Errors and Appeals, *Oil City Boiler Works vs. New Jersey Water & Light Company*, 79 Atlantic Reporter, 451.)

Time for Payments Under Structural Steel Contract.—An agreement for the furnishing of steel work, providing for payment of 90 per cent. of the price on delivery and the remainder 35 days after completion of the work, required payments in installments as the work progressed, not entitling the owner to retain the first payment until all the material was delivered, and was controlled by a general custom requiring monthly payments. (California District Court of Appeals, *Vulcan Iron Works vs. Cook*, 114 Pacific Reporter, 995.)

Rights Under Conditional Sale Contract.—Where machinery is sold under a contract reserving title in the seller until payment of the price, on breach by the buyer, the seller may retake the machinery or ratify the sale and sue for the price, but, the remedies being inconsistent, he cannot, after suing on a note given for the price, subsequently sue to rescind the sale and retake the machinery. (New York Supreme Court, Appellate Term, *Henry Pels & Co. vs. David M. Oltarsh Iron Works of New York*, 129 New York Supplement, 371.)

Commercial Report as Libel.—A commercial report giving a lower rating than a concern is entitled to, not being libelous on its face, the concern cannot maintain suit on the ground of libel without showing special injury or damage. (Oklahoma Supreme Court, *N. S. Sherman Machine Company vs. Dun*, 114 Pacific Reporter, 617.)

Ratification of Contracts to Sell—Damages Recoverable on Breach by Buyer.—A manufacturing company ratified a contract to sell articles, made by its manager's acceptance of an order, by failing to disaffirm the agreement and by making and delivering part of the articles. On breach of a contract to buy the seller cannot enhance the damages recoverable by

him against a guarantor of payment of the contract price by manufacturing articles after being notified that the buyer will not receive them. (Massachusetts Supreme Judicial Court, *Cumberland Glass Mfg. Company vs. Wheaton*, 94 Northeastern Reporter, 893.)

Circulars Not Constituting Offer to Sell.—Circulars issued by a manufacturer designed to secure sale of articles at a uniform retail price, stating the terms upon which they will be sold to the jobbing trade, and that the manufacturer would not be liable for failing to fill orders, etc., did not constitute an offer to sell upon those terms, so as to constitute a completed contract on transmission of an order, which the manufacturer refused to fill. They are mere invitations of proposals for sales. (Massachusetts Supreme Judicial Court, *Montgomery Ward & Co. vs. Johnson*, 95 Northeastern Reporter, 290.)

Right of Seller to Stop Shipment in Transit.—The right of a seller to stop a shipment in transit on account of the buyer's insolvency is lost when the buyer has surrendered the bill of lading to the railroad company at the destination and has rebilled the shipment to his buyer at another place and they have gone on to that destination. (United States Circuit Court of Appeals, Eighth Circuit, in re *W. A. Paterson Company*, 186 Federal Reporter, 629.)

Effect of Warranty of Engine's Capacity.—A contract to sell a gas engine arranged to use gasoline fuel and guaranteed to develop 55 hp. and operate a 10 per cent. overload, requires an engine of that capacity with gasoline used as fuel. (Massachusetts Supreme Judicial Court, *Saco Brick Company vs. J. P. Eustis Mfg. Company*, 93 Northeastern Reporter, 628.)

Rights of Buyer on Seller's Breach of Contract.—Where a contract is made for the purchase of different articles of machinery which taken together constitute an outfit and the omission of any one of the articles renders the outfit useless and the buyer offers to pay a gross price for the entire outfit, the contract is indivisible and a breach of it results from the seller's failure to deliver any separate article. Where a breach is caused the buyer has the right to rescind the contract on prompt notification to the seller of the breach and a return or offer to return the article or articles which he has received. (Georgia Court of Appeals, *Georgia Supply Company vs. Coffee*, 69 Southeastern Reporter, 1083.)

Rights of Patentee Concerning Infringement.—A patentee who has sufficiently described and distinctly claimed his invention is entitled to every use to which his device can be applied, whether he perceived or was aware of all such uses at the time he secured his patent or not. In patents for a combination it is well settled that if any essential element of the combination is omitted from an alleged infringing device without substituting therefor its clear mechanical equivalent there is no infringement. (United States Circuit Court of Appeals, Eighth Circuit, *Acme Truck & Tool Company vs. Meredith*, 183 Federal Reporter, 124.)

Rights of Inventor Before Issuance of Patent.—An inventor or his assignee has before the issuance or allowance of a patent an inchoate right of property in his invention and in a pending application for a patent which he may assign or with which he may deal as an article of property. (Massachusetts Supreme Judicial Court, *Richardson Shoe Machinery Company vs. Essex Machinery Company*, 93 Northeastern Reporter, 650.)

Substitution of Mechanical Equivalents Not Patentable.—Substitution of a screw to fasten together two parts of a device for a rivet used in prior devices to make the parts more readily detachable does not constitute patentable invention. (United States Court of Appeals, Eighth Circuit, *Boss Mfg. Company vs. Thomas*, 182 Federal Reporter, 811.)

Buyer's Remedy for Breach of Warranty.—As a general rule breach of warranty of a thing sold does not entitle the buyer to rescind the contract after it has been executed in the absence of fraud. The remedy is to sue for damages for the breach or to counterclaim in a suit brought by the seller to recover the price. (Indiana Appellate Court, *A. D. Baker Company vs. Cornelious*, 93 Northeastern Reporter, 686.)

Necessity for Reducing Contract of Sale to Writing.—Under the statute which makes certain oral contracts to sell chattels void where there has been no payment on the purchase price and no delivery of possession to the buyer, delivery must be accepted by the buyer with manifest intent to take possession. (New York Supreme Court, Third Appellate Division, *Drake Hardware Company vs. DeWitt*, 126 New York Supplement, 868.)

Trade Publications

Electrical Machinery and Appliances.—Fort Wayne Electric Works of the General Electric Company, Fort Wayne, Ind. Four bulletins. No. 1130 treats of the Northern type K direct-current motor which is adapted to meet any requirement where an intermittent service series-wound motor is applicable. The construction of this motor is described at length and there are a number of engravings showing applications of it. No. 1131 relates to the use of tungsten series lamps for street lighting. The various appliances used with the system are illustrated and described and there are a number of engravings showing streets lighted in this way. No. 1132 deals with the type TAB belt-driven self-excited alternator. This machine generates multiphase current and has been developed for use in small power and isolated lighting plants where inductive loads are encountered. These generators are of revolving armature self-excited type and are arranged for either belt or direct connection. No. 1133 calls attention to an induction type of single-phase watt-hour meter.

Centrifugal Pumps.—The Goulds Mfg. Company, Seneca Falls, N. Y. Bulletin No. 105. Illustrates and describes a line of single-stage, single-suction centrifugal pumps, which are intended to be used with heads ranging as high as 100 ft. These pumps are adapted for general pumping service, as well as for use on irrigation projects, in sewage disposal and water supply plants, excavation work, paper and pulp mills, for mine service, in conjunction with surface condensers in power plants, in breweries and in chemical and refining plants. Their construction is described at length and a number of the different sizes are illustrated. The pumps can be driven by direct-connected electric motors and gasoline engines, or by belt, and there are halftone engravings showing units driven in each of these three ways. A number of useful suggestions for installing, priming and starting these pumps are given and tables of dimensions, capacities and the power required for various deliveries complete the bulletin. An illustrated description of this pump appeared in *The Iron Age*, August 24, 1911.

Draught Gauge.—Precision Instrument Company, Detroit, Mich. Mailing card. Treats of the Precision dead-beat draught gauge for boiler house service. This gauge indicates the draught in inches of water, the graduations reading to tenths. Two types of gauge are made, one in a substantial cast-iron case for attaching to the boiler front and the other for portable use.

Electrical Apparatus.—Westinghouse Electric & Mfg. Company, East Pittsburgh, Pa. Circular No. 1104 and a number of loose leaf sheets. The circular relates to a line of portable meters for alternating and direct current use. These are made in both the direct and zero reading types for reading the voltage, current, power, frequency and power factor of alternating-current circuits, as well as the voltage, current and power of direct-current circuits. After a brief discussion of the considerations affecting the selection of a type of instrument and the classification of the different types of meters, the various kinds are described at some length. The different meter scales which can be furnished are reproduced and a table of weights and overall dimensions completes the circular. The loose leaf sheets are designed to be added to the company's perpetual catalogue No. 3001 and treat of various types of electrical apparatus including circuit breakers, fuse blocks, measuring instruments, generator and feeder panels and distributing transformers.

Coal Boulets.—W. D. Althouse & Co., Stephen Girard Building, Philadelphia, Pa. Booklet. Size, 5 x 6½ in., describing the Elkhart boulets made from slack from the Elkhart mine in Allegheny County, Md. The boulets are ovoid in form, each weighing 1.6 oz., giving 10 to the pound. They are midway between anthracite nut and stove sizes. Analysis is given, also comparison of thermal values, with statement of advantages of using this form of fuel. Ayers & Chase, Hammond Bldg., Detroit, are agents.

Drill Vise.—The Skinner Cluck Company, New Britain, Conn. Circular. Deals with the Hopkinson drill vise, which is designed primarily for use on the upright drill, although it can be used as well on the planer, shaper and milling machine. The construction of the vise is briefly described and mention is also made of a tool-maker's vise.

Electric Lighting Fixtures.—Catalog B-19 of the Benjamin Electric Mfg. Company, Chicago, New York and San Francisco. Profusely illustrated book of 80 pages showing the numerous forms of lighting fixtures and reflectors for illumination with electricity without the use of pendants or other exposed wires. A leaflet from the company illustrates a screwdriver with a swiveling handle made up of insulating material, so that besides being of use where one is in danger of electric shock it is designed to take the place of the ratchet screwdriver.

Pumps.—American Steam Pump Company, Battle Creek, Mich. Folder No. 350. Gives a comparative estimate of the merits of simplex and duplex pumps from the standpoints of operation, construction and economy. A few reasons why the Marsh Simplex pumps will lower the fuel and maintenance bills of plants where they are installed are also included.

Ratchet Drills.—Armstrong Bros. Tool Company, 339-357 North Francisco avenue, Chicago, Ill. Booklet No. 4. Deals with the Armstrong line of ratchet drills which are made in the Packer, standard, universal and short styles. These are designed for meeting the needs of any condition of work such as hard, rough service, awkward corners and confined spaces, where a short head and long feed are essential, and also for general service. All of the different types are illustrated and brief tables of sizes are included.

Water Heater.—David C. Seymour, 49 Lawrence street, Newark, N. J. Eight-page circular. Illustrates an internal manifold water heater for manufacturing and domestic purposes, involving a malleable iron head to a heater of the usual cylindrical form, with the heating pipes fixed to the head, so that inspection or repair of the piping can readily be obtained by removing the head. The heating pipes are connected in pairs at the far end by return bends.

Ball-Thrust Bearings.—Standard Roller Bearing Company, Philadelphia, Pa. Bulletin No. 25. Pertains to the line of grooved ball and thrust bearings made by this company. The various types are illustrated with the dimensions and space is given to a number of typical applications of the bearings.

Alternating-Current Rectifiers.—Westinghouse Electric & Mfg. Company, East Pittsburgh, Pa. Three folders. All of these deal with the use of the Westinghouse-Cooper Hewitt rectifier outfits, Nos. 4201 and 4204 being devoted to the charging of automobile and telephone batteries respectively. No. 4205 calls attention to the use of one of these outfits for operating direct-current arc lamps from an alternating-current lighting circuit.

Cutters.—Union Twist Drill Company, Athol, Mass. Catalogue No. 100. Shows a new line of milling cutters which were developed by the Cincinnati Milling Machine Company as an aid to securing greater results from its high power milling machines. A discussion of the development of these cutters which was carried on under the personal direction of this company's chief engineer, A. L. DeLeeuw, is given briefly and following this are engravings and tables of dimensions of the various types of cutters which the Union Twist Drill Company is prepared to manufacture. A more extended account of the subject of milling cutter efficiency, which is briefly given in the catalog, was printed in *The Iron Age*, May 11, 1911.

Crayons.—Zelnicker Crayon Works, St. Louis, Mo. Pamphlet. Illustrates a line of indelible lumber crayons; crayons for marking glass, leather, paper, tin, castings, pipes, etc., and soapstone crayons for marking iron and steel.

Steam Heating.—Warren Webster & Co., Camden, N. J. Pamphlet. Deals with the Modulation heating system of this company as installed in the Haynes Building, Boston, Mass. Typical floor plans are reproduced, together with photographs showing portions of the system. Space is also given to a test of one of these systems installed in an office and warehouse building in Montreal.

Steel Castings.—Armor Steel Foundry Company, 4825 Spring Grove avenue, Cincinnati, Ohio. Pamphlet. Describes the use of the Gebhard process for making hardened steel castings or steel castings with hardened wearing surfaces without tempering, chilling, case-hardening or any treatment subsequent to the pouring of the metal. A number of typical Armor steel castings are shown and a number of testimonial letters and a partial list of users complete the pamphlet.

Small Tools.—Pratt & Whitney Company, Hartford, Conn., Catalogue No. 6. Size, 4½ x 7½ in.; pages, 248. This catalogue cancels all previous editions and describes and illustrates the various types of small tools which this company manufactures. The book is divided into seven sections relating to taps, dies, milling cutters, reamers, punches, drills and miscellaneous tools. In addition to the descriptions and illustrations of the tools there are 24 pages of tables giving the various dimensions of the different types of threads in use, cutting speeds for various standard drills, dimensions of wrought-iron welded tubes, a comparison of the different wire gauges, weights of various substances and tables of decimal equivalents of millimeters and fractions and fractions of inches.

Bearings and Bushings.—Hyatt Roller Bearing Company, Newark, N. J. Two bulletins. The first one, No. 305, pertains to the high duty type of Hyatt roller bearings. The construction of this bearing is described followed by a discussion of its advantages and limitations. The various types of bearings are illustrated with brief specification tables and a few of the applications of it given. The other bulletin, No. 600A, describes and illustrates the maker's commercial type of standard bushings. A number of applications of this bushing are shown by both line and halftone engravings.

Steam Specialties.—The D. T. Williams Valve Company, Spring Grove avenue and Township street, Cincinnati, Ohio. Condensed catalogue No. 9. Pertains to a line of steam specialties manufactured by this company, which includes brass and iron stop and check valves, gate valves, steam cocks, water gauges, gauge cocks, brass fittings, lubricators, oil and grease cups and Cookson steam traps and separators. After a general discussion of the Williams regrounding valves and their use, the various other types of specialties are taken up, illustrated and briefly described. A page is usually given to each specialty, the engravings occupying the upper portion while a price list and brief table fill the lower third and the remainder is devoted to a brief description.

The Machinery Markets

A number of Eastern railroads are preparing lists of machinery needs, presumably covering their requirements for 1912. From all accounts some heavy purchasing will be done in that direction in the near future. Eastern automobile truck manufacturers have been buying good quantities of machinery. A good single tool business is being done in Detroit, and there is a noticeable demand for special tools and wood-working equipment. There are inquiries out against some fair-sized lists in Cleveland, where business shows a steady improvement and a stronger demand for power equipment has developed. Scattered orders for small lots of tools are being placed in St. Louis, and the week's business there has been heavier than for some time past. Good rains have revived business in Texas and the machinery demand has bettered noticeably. The Mexican demand is improving and public service enterprises there promise to help the machinery trade. Machine tool orders are coming out more frequently on the Pacific coast, and orders for equipment for new logging camps are expected to come forward soon. Trade is particularly good in the South and business is well distributed. Reports from all directions indicate that export trade is keeping up well, the demand for machine tools for shipment to Europe and South America being especially good.

New York

NEW YORK, October 18, 1911.

There are indications that a number of railroads are preparing machinery lists apparently against their needs for 1912. The Delaware, Lackawanna & Western bought some machinery in this market during the week against the small list it sent out early in the month. A larger list covering needs for a number of the company's shops is in course of preparation. The Delaware & Hudson is getting up a list for its needs at Watervliet, N. Y., and both the Maine Central and the Boston & Maine are said to be making up schedules for machinery expenditures. There is no great amount of new business in sight from other directions, although inquiries are good and a fair amount of business has been placed of late. The Westinghouse, Electric & Mfg. Company has about completed its machinery purchases for the addition to its Newark plant and some of the automobile truck manufacturers have placed orders for small lists of machine tools. The export demand is, if anything, on the increase. German car manufacturers and French and Italian automobile makers are buying machine tools. Inquiries for machine tools for South America are coming in in good volume and some nice business has been done in mining equipment for Mexico. The jobbing foundries which have not been very active of late find inquiries for small castings increasing and some machinery manufacturers are buying castings for stock.

The Hooven, Owens, Rentschler Company, through its New York office, 39 Cortlandt street, has recently taken orders from the Central Pennsylvania Traction Company, Harrisburg, Pa., for one 34 x 68 x 60-in. cross compound engine direct connected to 1500 kw. D. C. General Electric generator; Ebensburg Coal Company, Philadelphia, Pa., two 400 kw. cross compound engines; Lehigh Coal & Navigation Company, one 400 kw. direct connected engine for delivery at Lansford, Pa. The company has also sold smaller sized engines to Carr Bros., New York, for export; American Vulcanized Fibre Company, Newark, Del.; G. F. Mather's Sons, York, Pa.; George B. Schaeffer, Reading, Pa.; Moore & White Company, Philadelphia, Pa., and the Manufacturers' Refrigerating Company, New York.

The Kenilworth Rubber Works, Kenilworth, N. J., has been incorporated with \$60,000 capital stock. The company has secured a factory building at Kenilworth and is equipping it for the manufacture of automobile tires and rubber novelties. The incorporators are George B. Bradshaw, Lester F. Dittenhoefer and Edward W. Lawlor.

The Senora Motor Horn Company is a new incorporation with \$50,000 capital stock to manufacture automobile signal supplies. The company has temporary offices at 21 Park Row, New York. The incorporators are Russell Goldman, A. Foshay and H. Neuhardt.

The National Spark Arrester & Damper Company, 31 Nassau street, New York, has been incorporated with \$100,000 capital stock to manufacture spark arresting devices and dampers. The incorporators are Philip K. Sweet, Walter W. Ames and James T. Neary.

The Clark Paper Mfg. Company, Rochester, N. Y., has purchased a site adjoining the New York Central Railroad with a view to erecting a new plant. The company will move the equipment now at its plant at Hill street and much additional machinery to be electrically driven will be added.

E. W. Edwards & Son, Rochester, will erect and equip a power house in connection with the new de-

partment store and restaurant which they are building at St. Paul and Division streets, this city.

The Laurier Brewing Company, Binghamton, N. Y., is about to add a new building and equipment to its plant at an outlay of about \$50,000.

The Aetna-Wrights Health Underwear Company, Troy, N. Y., will erect and equip a four-story and basement mill 60x60 ft. with an extension 40x40 ft.

The Keystone Warehouse Company, Buffalo, N. Y., has let contract for an addition 130x140 ft. six stories and basement to its storage plant at Seneca, Hamburg and Alabama streets and the Pennsylvania Railroad. Considerable freight elevating equipment will be required.

The Pierce Arrow Motor Car Company, Buffalo, has purchased 35 acres of land adjoining the New York Central Railroad belt line not far from its present extensive plant at New York Central belt line and Elmwood avenue. The company will erect a mammoth plant for the manufacture of auto trucks and commercial vehicles. The present plant of the company, which is for the manufacture of pleasure cars, is comprised of 12 buildings covering 20 acres. The new plant will be equally extensive and its construction and equipment will involve a large monetary outlay.

The Safety Steel Company has been incorporated at Buffalo with a capital stock of \$50,000 to manufacture the Hawkins patent nut lock. For the present the company will not establish a manufacturing plant, but contract for the making of its product. Chas. A. Fox is president, and J. W. Rose secretary and treasurer. The office of the company is at 744 Ellicott Square building.

The city of Erie, Pa., will install a new 20,000,000 gal. pump at the waterworks and has engaged consulting engineers, Chester & Fleming, Pittsburgh, Pa., to prepare plans for the work.

The Erie Forge Company, Erie, Pa., will soon let contracts for the erection of two manufacturing buildings to cost about \$25,000.

New England

BOSTON, MASS., October 17, 1911.

Those manufacturers and dealers who attended the meetings of the National Machine Tool Builders at New York last week gained little encouragement as to the condition of the machine tool trade, but nevertheless it was clearly demonstrated that the business might be considerably worse, taking the average. Various signs point to some improvement in general business conditions in this territory. The tool steel trade, which is a pretty good barometer of industrial conditions in the metal lines, has improved. One large dealer finds that each month since June has made a gain over that preceding it, until now business is some 60 per cent. of maximum, not a high figure, excepting by comparison, but still fair, everything considered. A large dealer in imported tool steels reports an increase in orders over September, but the railroads and large railroad equipment manufacturers are not conspicuous in the buying. It is a notable fact that importers are maintaining good stocks by large purchases abroad, and the trade generally is keeping itself prepared to take care of the increase in business whenever it shall come.

The Simplex Tool & Supply Company, Boston, has occupied the store at 125 Purchase street, corner of Hartford street, and will carry a line of furnaces, ma-

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chine tools, small tools, etc. The business has been re-organized on a substantial basis, with H. D. Evans, of the H. D. Evans Steel Company, as president. The company will deal in gas furnaces of its own make for the treatment of steels and for the melting of soft metals; the hacksaw machines of the Racine Machine & Tool Company, Racine, Wis.; the abrasive metal cutters of the Slack Mfg. Company, Springfield, Vt.; the positive pressure blowers of the Connersville Blower Company, Connersville, Ind.; the high speed taps and dies of Winter Bros., Wrentham, Mass., for which the company is the sole agent; steel balls, hacksaw blades, Meteor alloy wire, twist drills, reamers, cutters, etc.

The D. E. Whiton Machine Company, New London, Conn., has completed an addition to its works to provide for rearrangement and increased floor space in some departments, with a new tool room and drafting room.

The H. A. Mathews Mfg. Company, Seymour, Conn., manufacturer of stove and other metal trimmings, suffered an estimated loss of \$75,000 by fire, October 11. A dispatch states that the presses and other heavy machinery were not injured.

The New Haven Clock Company, New Haven, Conn., will erect a four story brick addition.

The Massachusetts Institute of Technology has purchased 50 acres of land on the Cambridge bank of the Charles River basin, just outside of the city of Boston, and will create its group of new buildings on the premises. The administration buildings at Boston will be maintained for some time because of legal obstacles to their sale.

The Holtzer-Cabot Electric Company, Brookline, Mass., was not a heavy loser of machinery in the recent fire. The buildings containing equipment escaped with comparatively little damage, it is stated. The plant will be rebuilt. If machinery will be required later the trade has not been so informed as yet.

F. W. Derbyshire, Waltham, Mass., recently with the Waltham Mfg. Company, has established a business of his own at Waltham and will build a line of chucks and watchmaker's machinery.

Arthur D. Little, Inc., 93 Broad street, Boston, Mass., engineer and chemist, will erect laboratory buildings at Brookline avenue and Bellevue street. The first structure will be occupied as a complete paper making plant equipped for experimental work, the purpose being to test the value of paper making materials on a commercial basis.

The Adams Ball Company, Hartford, Conn., will erect a factory building at Elmwood, a suburb, 40 x 100 ft., two stories.

Additions to general manufacturing plants include a beam house, about 85 x 480 ft., for the American Hide & Leather Company, at Lowell, Mass., to cost \$110,000; addition 30 x 200 ft., four stories, for the Old Town Canoe Company, Old Town, Maine, and a factory 30 x 54 ft., two stories, for Lewis Hawthorne, New Haven, Conn.

The Gilbert & Barker Mfg. Company, Springfield, Mass., states that the plans and specifications for its new plant were prepared by Edward H. McClintock, engineer, of that city, who will superintend the construction.

Philadelphia

PHILADELPHIA, Pa., October 17, 1911.

That the machine tool trade in this district is on about a fairly even basis, with the outlook for the future a trifle more favorable, is indicated by reports gathered from both merchants and manufacturers. Considerable attention has been given by the trade during the week to the New York conventions of the National Machine Tool Builders' Association and the Machinery Section of the National Supply and Machinery Dealers' Association, as well as the convention of the American Street Railway Association, held in Atlantic City, N. J., and the trade has, to a certain extent as a result of these meetings, been inclined to look at the business situation in a somewhat more favorable light. While current business continues of the small lot order, a few inquiries of better proportions are under negotiation, the only difficulty being that the extreme cautiousness of prospective buyers results in slow closing of contracts. Inquiries have been somewhat improved generally although the major portion are still confined to small single tool requirements. There is still an absence of any important railway demand coming from the railroads in this district.

Builders of machinery, tools and equipment continue to operate their plants on a fairly even basis; in instances gains are reported in some departments, but these are largely offset by quieter conditions in other directions. Plant operations vary from 50 to 75 per cent., with instances where full time is being made, but in the majority of such cases the usual full complement of employees is usually considerably reduced. Some little export business is reported but it is largely in special tools and equipment. In the second-hand machinery market business continues irregular. Moderate purchases of power equipment are being made but propositions involving any material capacity move slowly. Business in boilers is more active than is that for engines. The foundry trade varies but little, in instances gains in orders for steel castings are reported by some foundries, although the bulk of the orders call for prompt shipment.

The Pennsylvania Railroad Company is having plans prepared for a new grain elevator to be erected probably at its Greenwich piers, which will embody all modern features in construction and operation. Plans are also being considered for improvements to some of its Delaware River piers as well as some new work of that character.

An Eastern buyer is in the market for an alligator shear, to cut up to 2 in. square. A Pitman shear with direct connected engine drive is preferred. Address communications to Box 270 A, care *The Iron Age*, Philadelphia, Pa.

Application for a Pennsylvania charter has been made by the City Light, Heat & Power Company, which is being formed to manufacture and supply light, heat and power, using electricity as power, to various cities in Berks and other counties in the coal regions in this State. Particulars regarding the personnel of the incorporators are not available at this time.

The Newton Machine Tool Works, Inc., reports the receipt of more orders in the last two weeks than for a full month previously. Inquiries are reported to be better and the outlook is considered more favorable. Recent orders have been largely for told saw cutting off machines, milling machines and rotary planing machines, several orders for the former two classes of equipment being for export. Orders are still confined to single and small lots of tools with deliveries going forward in a general way.

The Hamilton Rubber Company, Trenton, N. J., has, it is stated, awarded a contract to Burton & Burton, of that city, for the erection of a three-story brick addition 61 x 184 ft. to its factory. Kleeman & Fowler are said to have been the architects.

The Nazel Engineering & Machine Works has taken a fair volume of orders, largely for special tools which, in addition to a good amount of general repair work, keeps the plant fairly well engaged. This concern has recently shipped a 6-ton Beche forging hammer to a local concern and two 4-ton hammers to a purchaser in the Cleveland, Ohio, territory.

The R. S. Newbold & Son Company, Norristown, Pa., is very busy in all departments and has sufficient orders to keep so engaged for the next three months. Inquiries for its various equipment are being received daily and the outlook is considered very encouraging. The company has just shipped a complete set of furnace top castings to the Warwick Iron & Steel Company and another set to the Colonial Iron Company. It has orders for considerable rolling mill equipment as well as straightening machines, the latter for Gary, Ind. Among other orders is one for a large rotary shear, with a capacity for cutting circles up to 12 ft. in diameter, 1 1/4 in. thick, for one of the largest steel works in Austria.

The Birdsboro Steel Foundry & Machine Company, Birdsboro, Pa., finds business considerably better than it was several months ago, particularly in its machine department. The foundry departments still continue to operate below normal capacity. This company is rushing work on its new erecting shop which it hopes to have completed and ready for occupancy before the end of November.

Mergers of power and illuminating companies continue to be noted, the most recent being that under the name of the Edison Electric Company, Lancaster, Pa., with a capital stock of \$1,500,000, formed by the consolidation of the Edison Electric Illuminating Company, Lancaster, Pa.; Columbia Light, Heat & Power Company; Columbia, Pa.; Lititz Electric Light, Heat & Power Company, Lititz, Pa.; Mountville, Penn Township, Rapho Township, Mt. Joy Township, East

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& West Donegal Township electric light companies; East & West Lampeter, East & West Hempfield, Manor, Manheim, Warwick and Lancaster Townships electric companies and the Manheim Suburban Electric Company. The officers of the new company are named as follows: president, W. W. Griest, Lancaster, Pa.; vice-president, George Bullock, New York; secretary-treasurer, J. S. Graybill.

The Gray Iron Foundry Company, Reading, Pa., has recently installed a new 56-in. Barry & Zecher cupola, a new air compressor and several new disc grinders, in order to provide better facilities for its work in special lines and is preparing to manufacture the line of art metal goods formerly made by the National Brass & Iron Company, of that city, the patterns and equipment of which were recently purchased by the Gray company.

Cleveland

CLEVELAND, OHIO, October 17, 1911.

The demand for machine tools continues to show an improvement. Some of the dealers did quite a satisfactory business during the week in single tools and small lots. One dealer sold one lot of tools aggregating \$4500 and has another inquiry for machinery equipment amounting to about \$10,000. The latter is for factory extensions which have not yet been definitely decided upon. General inquiries are somewhat better and the market shows more life than for some time. Inquiries as a rule, however, are small. The demand for second hand machinery is a little more active.

The demand for steam power plant equipment is quite active and some boiler makers have orders for some time ahead. The demand for blowers is good. Conditions with crane builders are rather quiet, orders being mostly for small installations. The demand for pipe threading machinery is very good and some makers have all of the orders that they can fill. In electrical equipment there is a fair demand for small motors. Business has improved materially with some of the small malleable iron foundries that do not turn out heavy castings. Makers of steel stampings are getting a good volume of orders.

The project to build a large power building to furnish quarters for small manufacturing establishments, which was inaugurated in Toledo some time ago, has now taken definite shape and it is expected that the erection of a large building by a company to be called the Toledo Factories Company will be started soon. It is expected that when the building is completed many small industries will locate in that city, which would otherwise be compelled to seek quarters elsewhere because of lack of accommodations.

The Superior Metal Products Company, Elyria, Ohio, is in the market for the following equipment for its new plant: 5-hp. gas engine, lighting generator, capacity 200 to 300, 16 candlepower, 110-volt generator, a low pressure boiler for heating factory and platform weighing scales with a table 4 ft x 6 ft.

The Burke Valve Company, Cleveland, has been incorporated with a capital stock of \$50,000 by W. B. Burke, W. G. Rose, T. H. Duncan, W. H. West and Fred C. Backus. The company is not yet ready to announce its plans.

The Izant-Latimer Electrical Construction Company, Warren, Ohio, has been incorporated with a capital stock of \$6,000 by Clyde Latimer and others.

The National Supply Company, Toledo, Ohio, maker of oil and gas well machinery and supplies, reports a very good demand for its products from all over the world. This company has recently completed large extensions to its plant.

The Cleveland Cooperage Company has been organized with a capital stock of \$60,000 to manufacture barrels and packing boxes. The company will occupy a site formerly occupied by the Ohio Cooperage Company at Clark avenue, S. W., and the Big Four Railroad tracks.

The Ranney Fish Company, Lorain, Ohio, will erect a large cold storage plant.

The American Box Company, Cleveland, will build a new factory and boiler house on West Third street. The building will be of brick, two stories, 64 ft. x 96 ft.

The Electric Signal & Engineering Company, Alliance, Ohio, has been incorporated with a capital stock of \$20,000 by D. C. Schultz, Richard James and others.

The directors of the Republic Rubber Company,

Youngstown, Ohio, have voted in favor of an increase of \$1,000,000 in its capital stock to provide for plant extensions.

The Eberling Cement Tile Machine Company, Cleveland, has been incorporated with a capital stock of \$10,000 by C. M. Eberling and others to make machinery for the manufacture of clay products.

The Novelty Sign Company will remove from Lima to Kenton, Ohio, where it will occupy the plant formerly occupied by the Runkle Company.

Chicago

CHICAGO, ILL., October 17, 1911.

The E. M. Burr Company, Champaign, Ill., has been incorporated with \$100,000 capital stock to do a general foundry and machine shop business, by E. M. Burr, Nancy G. Burr and Manford Savage.

The Beaverville Light & Utility Company, Beaverville, Ill., has been incorporated with a capital stock of \$6,000 for the purpose of manufacturing gas for light, fuel and power. The incorporators are Joseph O. Lambert, Nelson C. Boudreau and Delphi Codere.

The Republic Fence & Gate Company, North Chicago, Ill., has begun work on a two-story brick factory, 40 x 80 ft. Several additional fence manufacturing machines will be installed.

The Wedron Sand & Clay Products Company, Aurora, Ill., has been incorporated with a capital stock of \$100,000, by George R. Ackerman, John M. Raymond and N. W. Evans.

W. M. Campbell, of Pittsburgh, Pa., will build a new bakery at Des Moines, Iowa, the building and machinery to cost approximately \$60,000.

The Pella Motor Car Company, Pella, Iowa, has been incorporated with a capital stock of \$10,000. The incorporators are W. H. Fowler, H. P. Van Gorp and E. J. Van Gorp.

The Red Oak & Northwestern Railway Company, Red Oak, Iowa, has been incorporated with an authorized capital stock of \$250,000. The officers of the company are George C. Boileau, president, and H. W. Clovis, secretary, both of Red Oak.

The Schlitz Brewing Company, Milwaukee, Wis., has made application for a permit to erect an ice plant at the foot of Walnut street. The building is to be 146x160 ft.

The Rockwell Mfg. Company, Milwaukee, Wis., contemplates the erection of an addition 120 ft. x 130 ft. to its plant at Sixth avenue and Park street.

The Badger Wood Material Company, Merrill, Wis., incorporated with \$25,000 capital stock, will erect a new plant on the Ollhoff saw mill site. Officers of the company are Ferdinand Ollhoff, president; Robert Hackbarth, vice-president and manager, and L. G. Gaylor, secretary and treasurer.

The Pfister & Vogel Leather Company, Milwaukee, Wis., will build a seven-story warehouse 100 ft. x 112 ft. reinforced concrete construction throughout on First avenue and Virginia street. The company is also contemplating a three-story office building at the same location.

The R. Fehler Brush Company, Milwaukee, Wis., is remodeling its building at 395 Reed street, and making a factory addition.

The Nameken Iron Company, Duluth, Minn., has filed an amendment to its articles of incorporation to increase its capital stock to \$1,500,000.

The Chicago, St. Paul, Minneapolis & Omaha Railroad has let contracts for the construction of a 15-stall roundhouse, a boiler and machine shop, 50x140 ft., and a store house, 25x75 ft., to be erected at Omaha, Neb., at a cost of \$40,000. The machinery details will be arranged by E. B. Thompson, superintendent of motive power and machinery, who has offices at St. Paul.

Detroit

DETROIT, MICH., October 17, 1911.

General conditions during the first part of October are looked upon as extremely favorable in the machinery trade in this locality. Considerable industrial activity is being noted, and while the bulk of current orders are confined to single tool propositions, still, the number of these amount to a very respectable total and dealers express themselves as satisfied with the outlook. Special tools and equipment are in noticeable demand. The demand for castings is quite satisfactory and the

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foundry trade is in a generally good condition, though some few exceptions are noted. Second-hand machinery is moving less briskly than during September. Furniture factories are making numerous additions to their equipment and wood-working machinery is consequently more active. Few installations of engines and boilers are reported and the installations called for are generally small. A large amount of development work is being carried forward in the iron mining region in northern Michigan, and in spite of pessimistic reports as to the outlook for the iron trade a number of mines are increasing their output and adding to their equipment. Although purchase of contractors supplies has slackened, somewhat greater activity is being shown in building circles than for some weeks past.

The Michigan Leather Packing Company has been incorporated with a capital stock of \$25,000 by S. C. Leonard, J. D. Rockwell and R. G. Maloney, and will engage in the manufacture of hydraulic valves and packings. A factory site has been purchased and operations will be commenced in the near future.

Ground has been broken for a new factory for the Winkley Company, Detroit, manufacturer of oiling devices. The building will be 100x100 ft. and will cost \$15,000. The factory is located in Windsor, across the river from Detroit, and will be used as a branch plant by the company.

The Commercial Engineering Company is a new organization with \$50,000 capital stock to manufacture and deal in machine tools, machinery and gas engines. J. C. Heaslet, R. E. Baus and J. B. Book are the principal stockholders.

The J. T. Slocumb Company, Providence, R. I., has arranged for a special exhibition of its line of tools in Detroit from October 14 to 21, inclusive. Several tools of new design will be shown.

The American Brass & Iron Company has completed plans for the construction of a one-story foundry at its present plant.

The A. T. Hallock Company has taken over the unused plant of the Manistee Novelty Works, and is equipping it for its own use. The company manufactures a wide variety of patented wooden specialties.

The Popeman Electric Stove Company, which was recently organized at Flint, Mich., is making preparations to greatly increase its output. The company reports an excellent volume of business.

The Charles P. Limpert Company, Holland, Mich., manufacturer of furniture, has awarded the contract for a three-story addition 130x150 ft. to its factory, which will double its capacity.

The city of Ishpeming, Mich., has purchased the site occupied by the Superior Lumber Company and the company is negotiating for a new site on which a larger and more modern plant will be erected early in the spring.

The G. T. Eames Company has been organized at Saginaw, Mich., with a capital stock of \$15,000 by H. H. Everard, G. T. Eames and J. H. Penniman. The company will manufacture machine tools and power equipment, specializing on a mandrel press recently patented by Mr. Eames.

J. Van Duren & Co., broom manufacturers, Grand Rapids, Mich., have purchased a site and will erect a new broom factory.

The Star Furniture Mfg. Company, Zeeland, Mich., is enlarging its plant by the erection of a two-story building 40x60 ft. Some additional wood-working machinery will probably be installed.

J. A. Klise, secretary of the American Carving & Mfg. Company, Grand Rapids, Mich., is organizing a wood-molding company and will erect a two-story factory, about 100x200 ft. for the new business.

The Spring Brook Ice Company, St. Johns, Mich., is contemplating the building of an artificial ice-making plant. D. W. Kelley has charge of the proposition for the company.

Richard Roubus, St. Louis, Mich., is organizing a company for the manufacture of automobile trucks.

The Brown-Morse Company, Muskegon, Mich., has filed notice of an increase of capital stock from \$50,000 to \$250,000 to take care of its rapidly increasing business. The company manufactures office devices.

The Besser Foundry Company, Alpena, Mich., has received an order for a large amount of cement mixing and tile machinery for export to South America.

The Kolb Brewing Company, Bay City, Mich., has broken ground for a boiler house in which two 150 h. p. boilers will be installed. The company has just completed a large addition to its bottling works, equipped with modern machinery.

The McMullen Machinery Company, Grand Rapids, Mich., has taken considerable new business recently, including the equipment for the Cadillac Chair Company's plant and the machinery for the Fuller & Rice Lumber Company's new mill.

The Valley Boat & Engine Company, Saginaw, Mich., has completed plans for reorganization including an increase of its capital stock to \$30,000, and will make improvements to its present plant to cost about \$10,000.

The Peerless Wire Fence Company, Adrian, Mich., has about completed a large addition to its factory and has installed a complete electric galvanizing plant and a five-ton electric crane.

The Holland Gelatine Company, Holland, Mich., will erect a larger plant for the installation of a new process for manufacturing gelatine and glue.

The Home Interior Finish Company has been organized at Holland, Mich., with a capital stock of \$30,000, and will manufacture wooden articles.

The Richards-Wilson Pipe Covering Company, Grand Rapids, Mich., manufacturing insulating covering for underground steam pipes, has increased its capital stock from \$5,000 to \$30,000, and will enlarge its operations.

The Herrick Casket Company, Lyons, Mich., is negotiating for a larger factory and is planning on increasing its output.

The Terrill Equipment Company, Grand Rapids, Mich., will soon move into its new plant which will allow of a considerable increase in output. The company manufactures steel lockers and metal shelving.

A new company has been organized at Buchanan, Mich., under the style of the Simplex Ladder Company and will engage in the manufacture of stepladders. The capital stock is given at \$6,000.

The Holland Furnace Company, Holland, Mich., has filed amended articles of incorporation increasing its capital stock from \$50,000 to \$100,000.

The Hupp Motor Car Company, Detroit, manufacturer of the Hupmobile, has secured a factory site of a little more than seven acres at Milwaukee and Mt. Elliott avenues for its new plant. Plans are now being drawn for the new buildings which will be of the most modern construction. The new plant will give the company about three times its present floor space and will enable it to manufacture a great many parts which are now made outside.

The K. & H. Lamp Company, Detroit, has been organized with a capital stock of \$12,000 to manufacture and deal in motor lamps. Paul Krastin and John H. Hart are the principal stockholders.

The Briggs Mfg. Company, Detroit, is making an addition to its plant of a one-story mill and galvanized iron sand blast building.

A new foundry and machine shop will be established in Sault Ste. Marie, Mich., by H. W. King of Prentice, Wis., who has purchased as a site the mill building formerly occupied by C. W. Caskey & Son on Fort street.

Indianapolis

INDIANAPOLIS, IND., October 17, 1911.

The Hammond Steel Barrel Company, Hammond, Ind., recently incorporated, has had plans prepared for a one-story brick building, 60x200 ft., which is expected to be completed about January 1.

The Indiana Match Corporation, Crawfordsville, Ind., has been organized to take over the business of the Indiana Match Company. The authorized capital stock is \$100,000. The directors are A. M. Smith, G. B. Luckett, H. H. Ristine, O. M. Gregg, H. E. Greene, Chase Harding and C. D. Voris.

The Crescent Trunk Company, Evansville, Ind., has been incorporated with \$10,000 capital stock to manufacture trunks. The directors are Edward C. Kinkel, H. G. Becker and A. C. Hedderic.

The Stockford Reed & Novelty Company, South Bend, Ind., has been incorporated with \$20,000 capital stock to manufacture fishing tackle, etc. The directors are F. L. Dennis, W. F. Stockford and William Miller.

The Indiana Mfg. Company, Peru, Ind., maker of refrigerators and sewing machines, has reorganized since the death of the manager, Capt. Aaron N. Dukes, and has elected Elbert W. Shirk, of Bedford, Ind., president; Joseph H. Shirk, vice-president, and John Unger, secretary-treasurer.

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R. W. Howard has obtained a franchise at Kentland, Ind., and has organized an electric light and power company which proposes to supply light and power to Kentland, Brook, Goodland and Sheldon.

The Kokomo Sanitary Mfg. Company, Kokomo, Ind., has increased its capital stock from \$30,000 to \$60,000.

The Davis-Birely Table Company, Shelbyville, Ind., has been reorganized and incorporated with \$300,000 capital stock. The word The has been dropped from the name. Joseph E. McCartney and Frank Whitcomb have purchased the two-thirds interest of the late Charles L. Davis. Charles Birely is president and manager, Mr. Whitcomb vice-president, and Mr. McCartney, secretary-treasurer.

The Holland-St. Louis Sugar Company will erect a beet sugar plant at Decatur, Ind., to cost about \$1,000,000. The contract for the buildings has been let to a Cleveland, Ohio, construction company. The Commercial Club of Decatur provide the site of 40 acres, and wells to supply 400,000 gal. of water a day. L. G. Ellingham, Ind. secretary of State, Indianapolis, was largely instrumental in securing the industry for his home county.

The Kendallville Furniture Company, Peru, Ind., has changed its name to the Peru Chair Company.

Kemble & Kuehn, local contractors, will build an addition to the Muessel Brewing Company's plant, South Bend, Ind., to double its capacity. The improvements will cost \$30,000; machinery and equipment another \$100,000.

The Indiana Service Company has been organized at Anderson, Ind., to supply light and power to Anderson, Batesville, Shelbyville, Greensburg, Connersville, Rushville, Greenfield, Newcastle, Elwood, Tipton and Noblesville. The directors are Clement C. Hooven, Howard L. Otis, John T. Bacon, Charles A. Wilson and Henry D. Hughes.

The Fort Wayne Tile Company, Fort Wayne, Ind., has been incorporated with \$7,000 capital stock to manufacture hollow clay ware. The directors are Paul Koehler, Frank Kintz, J. H. Koehler, William Wertfeld and Henry Braun.

The Whitesides Motor Truck Company, Franklin, Ind., will move to Newcastle and consolidate with the Safety Shredder Company of that city.

The Kling Electric Company, Peru, Ind., has been incorporated with \$5,000 capital stock to manufacture electrical supplies. The directors are A. H. Kling, E. H. Kling and E. P. Kling.

The Muncie Brass & Aluminum Castings Company has been organized at Muncie, Ind., to manufacture brass and aluminum castings. It will use part of the Patrick Murphy foundry, Mr. Murphy continuing the manufacture of gray iron in part of the plant.

The South

LOUISVILLE, KY., October 17, 1911.

The past ten days have produced an amount of improvement in the Louisville machinery market commensurate with the expectations of the manufacturers and dealers who have been looking forward all summer to a banner fall season, and consequently no complaint can be registered with regard to the present status of the field. The manner in which machinery consumers, or rather purchasers, are awakening to the possibility of immediate execution of their intentions is the source of a great deal of satisfaction to the trade in general.

The prospect for the continuance of present favorable conditions is extremely auspicious. The industries of the Bluegrass region and the South are just working up to a full head of steam during the fine fall weather and whatever mechanical improvements and enlargements that become necessary as the expansion of manufacturing activity develops will be handled immediately to preclude the possibility of work along these lines having to be done during colder and more disagreeable weather that is coming. It is confidently predicted that the present period of autumnal prosperity will hold good until the middle of December or the beginning of the holiday season. Even at that date the chances of a serious slump are slight.

Contracts secured by Gateway City machinery men and manufacturers of the South during the past week have been comprehensive in character, covering railroad improvement, mill and foundry extension and the equipment of new manufacturing plants and public service stations. The spread of demand is taken as

an exceedingly good indication of steady prosperity for the trade at large.

J. E. Henry, recently appointed architect and supervisor of building for the Louisville public schools by the Board of Education, has completed plans for the up-to-date heating and ventilation of the Male High School Building. Several thousand dollars' worth of heating and ventilating equipment are to be installed in the structure, which was greatly damaged by fire last summer. Bids have been asked on the work and the contract is to be awarded within a week or so.

The Overbey Tanning Institute, a semi-philanthropic organization, filed articles of incorporation in Louisville a short time ago and will establish an up-to-date tannery, completely equipped, in the near future, although the site of the plant has not yet been decided upon. The Institute has been formed with a capital stock of \$1,000 for the purpose of teaching colored boys the tanner's trade, and has the following incorporators: Matthew Alley, A. Hocker, J. H. Kennedy and A. R. Wilhoit.

The Abell Elevator Company filed articles of incorporation in this city last week and is equipping a good-sized plant along the most approved lines, preparatory to starting operation as soon as possible. The factory is located on Eighth street, north of Main. The company proposes to manufacture and repair all types of elevators and has a capital stock of \$50,000. Its incorporators are George Abell, Garland H. Mourning and Garland H. Mourning, Jr.

It is reported from Maysville, Ky., that the Business Men's Club of that city is considering a proposition received from New York capitalists soliciting inducements to locate and operate a big steam boiler and hot water heating apparatus manufacturing plant in that city. It is probable that a company with about \$75,000 capital stock will back the establishment.

The Federal authorities in the postal service at London, Ky., have decided to install a gas engine and electric generator of large capacity in the London post-office in the near future. James Knox Taylor in Washington D. C., has asked for bids on the work and the award is to be made October 25, and will be pushed to completion immediately afterward.

The Crystal Ice Company filed articles of incorporation last week in Newport, Ky., and will establish and operate an up-to-date ice manufactory in the near future. The new company has a capital stock of \$100,000. The incorporators are Joseph Adams, Benjamin A. Adams and William Schmidt.

The Crystal Ice Company, Harrodsburg, Ky., will increase the capacity of its plant two tons per day. The necessary machinery for this and other improvements is to be installed at once.

The Morganfield Ice & Milling Company, Morganfield, Ky., has planned to increase its capacity for ice production considerably and will commence work upon the improvements about December 1, rushing them to completion. A contract has been awarded to the Frick Company, Waynesboro, Pa., for the erection of a new freezing tank made of steel with a daily capacity of 20 tons of ice; also two agitators of the most approved type, with a velocity of from 300 to 1000 rev. per minute. The company has also contracted with the Brownell Company, Dayton, Ohio, for the installation of two high-pressure boilers of 100 hp. each, giving the Morganfield ice plant a power house of ample capacity.

The Southern Bitulithic Company, with headquarters in Nashville, Tenn., has just completed the erection of a \$100,000 plant in Woodstock, Ala., for the crushing and separation of all sizes of stone for building purposes, the necessary machinery having been installed.

The ice plant of C. R. Sawtelle, in Anniston, Ala., is to have its capacity increased from 50 to 100 tons per day, Mr. Sawtelle having contracted for the necessary machinery.

The Howe Ice Company, Nashville, Tenn., is reported to be figuring on the establishment of a \$100,000 ice manufacturing plant in Anniston, Ala.

The United States Air-Brake Release Company has filed articles of incorporation in Montgomery Ala., with a capital stock of \$6,000. The company will establish a large plant for the manufacture of a patented air-brake. The officers of the new concern are: Walter Moore, president, Montgomery; M. J. Powell, vice-president, Montgomery; S. R. Bentley, secretary-treasurer, Birmingham.

The Lawrenceville Mfg. Company, Lawrenceville, Ga., has leased its big plant in that city to the Gate City Mills, of East Point, Ga. The new lessees pro-

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pose to improve the property and re-commence manufacturing as soon as possible. The mills are owned by the Filer & Stowell Company, Milwaukee, Wis.

George C. Thompson, of Atlanta, Ga. and E. M. Scofield, a prominent Philadelphia engineer, have completed a series of surveys and estimates in Anderson, S. C., and will solicit the City Council of Anderson for a franchise to erect and maintain a gas plant in that place.

John Sullivan and associates, of Louisiana, Mo., have announced that they are planning the establishment of a button factory in Batesville, Ark.

It is reported that in a general movement toward civic improvement the officials of Lexington, Tenn., are contemplating the installation of a new electric light plant of large capacity.

The Commercial Club of Mobile, Ala., is reported to be negotiating with out-of-town business men whose identity is not disclosed for the erection of a big \$350,000 cold storage plant in Mobile.

The Conner & Wallace Machine & Foundry Works has been incorporated in Columbia, Miss., with Claude Wallace as manager and M. W. Conner as secretary and treasurer.

The Galey Bolt Lock Company, Jackson, Tenn., has filed articles of incorporation to engage in the manufacture of iron bolts, locks, keys, etc. The new company has a capital stock of \$100,000 by W. F. Lamb, W. T. Peter and L. D. Newton.

The Standard Ice Company, Raleigh, N. C., has been incorporated with \$100,000 capital stock. The incorporators are E. C. Hillyer, A. R. D. and C. A. Johnson.

The Sullivan Hardware Company, Anderson, S. C., secured a contract a short time ago for the installation of heating and plumbing to the amount of \$14,000 from the executive committee of the Anderson College.

The Asheboro Wheelbarrow & Mfg. Company, Asheboro, N. C., is figuring upon extensive mechanical equipment, improvements and enlargements in its plant in that city. A complete array of bending machinery for working angle and channel iron, forging and riveting machinery is to be installed.

The Creamery Dairy Company, of Yoakum, Tex., has announced its intention of installing an individual electric lighting plant and will also equip and maintain an ice plant of 12 tons' daily capacity. Work upon the enlargements is to be begun as soon as possible.

The Peabody Electric Company was incorporated last week in Muskogee, Okla., with a capital stock of \$7,500, by A. D. Peabody, F. H. Neben and W. R. Robinson.

Extensive power plant improvements will be furthered in the near future in Richmond, Va., according to plans which are now being mapped out by the Gould interests. The capitalists are preparing to expend \$600,000 in establishing a new central power station which will have a minimum capacity of 12,000 hp. and a maximum capacity of 36,000 hp.

F. S. Shields, secretary of the Board of Works, New Orleans, La. will open bids December 7 for one 6000-kw. horizontal high-pressure condensing steam turbine and alternating current unit, one 150-kw. rotary converter with stationary transformer, switchboard, etc.

The Macon Motor Car Company, Macon, Ga., is having plans prepared for a factory for the manufacture of automobiles and will shortly be in the market for about \$50,000 worth of equipment. J. E. Keith is general manager.

The Hickory Handle & Mfg. Company, Conover, N. C., has been incorporated to manufacture tool handles. The company has purchased the plant formerly operated by J. Hunsucker at Conover, and will make alterations and add some additional machinery. The officers of the company are K. C. Menzies, president; J. L. Kiddle, vice-president; J. L. Cilley, secretary, and A. L. Shuford, treasurer.

The Chickasaw Motor Car Company, Memphis, Tenn., has been incorporated with \$25,000 capital stock to deal in automobiles and conduct a repair shop. The company has had plans prepared for a building, 40 x 200 ft., with an L 20 x 60 ft.

The American Brake Lever Company, Floyd, Va., has been incorporated with \$15,000 capital stock to manufacture brakes for all kinds of wheeled vehicles. The company is planning to erect a factory as soon as business demands. The officers of the company are V. M. Sowder, president; R. F. Tompkins, vice-president; S. R. Brame, general manager, and J. M. Peterman, secretary and treasurer.

St. Louis

ST. LOUIS, Mo., October 14, 1911.

October seems to be bringing some access of activity to the machine tool market, but it has not assumed very large proportions as yet. Most of the inquiries and of the purchases as well are from smaller concerns which are adding a tool here and there. None of the large concerns is in the market either as a purchaser or with a list for future consideration. One of the features of the week has been an increase in the interest in second-hand tools in good condition and this is encouraging the dealers a little. The past week, as a whole, is reported the best in several months and the near future is looked upon as good, comparatively speaking, though not up to normal or to capacity by any means.

The Ludlow Saylor Wire Company the past week completed the equipment of its new machine shop which has been under construction. The listed purchases run to about \$7,000 total.

The Des Moines Sheet Metal Company, of Des Moines, Iowa, has completed what is said to be one of the finest equipped factories in the West and has begun operations.

The Kloswove Fence & Mfg. Company, of Metropolis, Ill., has been incorporated with \$24,000 capital stock and will establish a plant for the manufacture of a special design of wire fencing. The incorporators are C. E. Trovillon, R. Matthews and J. T. Kimball.

The first of the Cotton Belt Terminal buildings, recently announced, has been authorized by the city building department, to cost \$165,000. The whole terminal structure is to cost \$750,000 and to be equipped with all the latest labor-saving mechanical devices.

The Hackett Mining Company, Joplin, Mo., has increased its capital stock from \$50,000 to \$120,000 for the purpose of increasing its equipment and extending its operations.

The Cremer Lumber Company, Little Rock, Ark., has been incorporated with \$200,000 capital stock by J. C. Cremer, G. G. Powell, W. W. Atkinson, A. J. Reap and R. S. Wilson, to establish lumber mills.

The Hamilton-Brown Shoe Company, of St. Louis, is arranging to build and equip another large factory in addition to those which it is already operating.

The Missouri Belting Company will erect a new factory at the northwest corner of Grand avenue and La Salle street, St. Louis, the building to be of brick construction and to cost \$19,800.

The Liberty Foundry Company is erecting a one-story foundry on Reilly avenue, St. Louis; cost, \$3,500.

Texas

AUSTIN, TEXAS, October 14, 1911.

Bountiful rains have fallen in nearly every part of the State, and have served to greatly revive business and to benefit the industrial situation generally. It is noticeable that there is an increased demand for machinery for manufacturing plants of various kinds. Much activity is also going on just now in the improvement of municipal public service plants. The situation in Mexico is beginning to show improvement, and it is expected that after tranquility is thoroughly established in that country the demand for American machinery will quickly become very great.

The Wichita Motor Company has received the machinery for the factory that it is installing at Wichita Falls for the manufacture of auto trucks.

H. C. Luck and associates have ordered the machinery for the automobile factory that they will install at Cleburne. All arrangements have been made for the rapid erection of the plant.

The City Council of Bryan has made arrangements for issuing \$8,000 of waterworks bonds, \$7,000 of electric light bonds and \$5,000 sewer bonds, proceeds of which will be spent in improving these public utility plants.

The Mamie B. Mfg. Company has been formed with a capital stock of \$30,000, and will erect a plant at Austin for manufacturing cotton chopper machines. The incorporators are W. B. Alexander, T. J. Cristal and Otto Ebeling.

The organization of a company with a capital stock of \$300,000 for the purpose of installing a waterworks plant and distributing system at Corpus Christi is being promoted. The Business Men's Club is said to be interested in the proposition. It is proposed to construct a dam across the Oso River, several miles west

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of town, and conserve the storm waters for the necessary supply.

The Commercial Club of Rockport is promoting the installation of an ice plant, in connection with which there will also be operated a cannery.

A. H. Hardin and associates will install an ice factory at Bartlett.

The Cameron Water Power & Light Company of Cameron, which recently entered into a 20-year contract to supply the city with lights and water, will install about \$18,000 of improvements. The plans and estimates for the proposed improvements have been made by N. Warrenfield, of Dallas.

The Commercial Club of Bryan is promoting the establishment there of an automobile factory. Chicago parties are interested in the project.

Steps have been taken to install a cotton gin at Rockport. The Commercial Club is interested.

The Creamery-Dairy Company will install a twelve-ton ice plant and an electric light plant at Yoakum.

The Caddo Oil Gas Company has been formed at Greenville for the purpose of boring oil wells in Marion County. It has a capital stock of \$25,000. W. J. Taylor, of Commerce, is president.

The Tolteca Cia. de Cemento Portland, S. A., will double the capacity of its large cement manufacturing plant near Mexico City. The company at present is turning out about 125 tons of cement per day.

The American Sugar Mfg. & Refining Company has been formed with a capital stock of \$6,000,000 with headquarters at Portales, N. M., for the purpose of erecting a large beet sugar factory at that place. The stockholders and directors are Charles Curtis, Abram W. Smith, Charles H. Sessions, all of Topeka, Kan., and Alfred B. Quinta, of Portales.

The Armour Packing Company has purchased several lots on the corner of Spruce & Front streets, in Texarkana, and it is announced that the company will erect a large cold storage plant to cost between \$40,000 and \$50,000.

Concordia Ice & Cold Storage Company, Concordia, is enlarging its present capacity by the addition of a new engine house and freezing room. New machinery will be installed.

Houston has been selected for the joint headquarters of the Buffalo Pitts Company, Buffalo, N. Y., and the Seager Engine Company, Lansing, Mich., of that State, both companies being engaged in the manufacture and sale of gasoline engines.

The Pacific Coast

PORTLAND, ORE., October 10, 1911.

Orders for machine tools are coming out with a little more frequency than for some time past, though there is no business of any great importance, few orders being booked for more than one or two tools. Other lines of machinery continue in active demand. While the logging season is about over in some localities preparations are being made to open new camps, and considerable equipment is being ordered for next season. The movement of sawmill machinery also is well sustained. The immediate demand for small irrigating units is rather quiet, but considerable figuring is being done, and a material increase of sales is predicted for next spring.

The Port of Portland Commission will receive bids November 9 for the construction of a 30-in. suction dredge with steel hull. The estimated cost is \$20,000.

The Fisher Flouring Mills Company, Seattle, Wash., has raised its capital stock from \$400,000 to \$1,000,000, with the object of doubling the capacity of its plant.

The Pacific Hardware & Steel Company, whose rolling mill in this city was recently sold to the Pacific Coast Steel Company, will continue to operate the mill to about the end of the year, using up a lot of raw material on hand, after which the plant will be taken over by the new management.

Alterations are to be made shortly on two steamers of the Grand Trunk Pacific Railroad, to cost about \$50,000. Oil burners will be installed.

The Western Coöperage Company, this city, has let a contract for an electric light plant for its logging operations on the Clatskanie River.

The Clark-Kelly Mfg. Company is planning to install a wood working plant in this city.

The Meyer Water Lift & Power Company of Colorado has been looking for a factory site at Edmonds, Wash.

The Wiest Logging Company is preparing to build a logging railroad and install a camp near Kelso, Wash.

It is reported that the Algoma Lumber Company will install a sawmill of 75,000 ft. daily capacity at Klamath Falls, Ore.

Garfield County, Wash., is contemplating the purchase of a gasoline road roller.

W. F. Bryan & Sons are preparing to install a large shingle mill at Ione, Wash.

A lot of new cleaning machinery is to be installed shortly in both the Union and Capitol flour mills at Stockton, Cal.

Contracts have been closed on a large lot of electrical equipment for the Salt River Water Users' Association, Phoenix, Ariz.

An auxiliary pumping plant is to be installed at the municipal water works of Patterson, Cal.

The Armstrong Machinery Company, Spokane, Wash., manufacturer of ice and refrigerating machinery is planning to increase its shop facilities and is in the market for a horizontal boring machine of large capacity, pipe bending machinery, disk grinders and other items incidental to high pressure pipe work.

Western Canada

WINNIPEG, MAN., October 14, 1911.

The Western Canada Foundry Company has been incorporated and will establish a foundry at Yorkton, Sask. W. J. Duncan, F. S. Collacott and G. H. Bradbrook are the directors.

The Canadian Pacific Railway Company has made plans to build a 16-stall roundhouse and establish railway shops at Wilkie, Sask.

A municipal gas plant for St. Boniface, Man., is again being discussed, and the council at its next meeting will go into the question as a result of a proposal recently made.

The Manitoba Bridge & Iron Works, Winnipeg, has purchased a large site at Transcona, Man. It is surmised that the company contemplates moving its Winnipeg plant to that new town, where the Grand Trunk Pacific shops are located.

The plant and business of Brandon Implement & Mfg. Company, Brandon, Man., which failed some time ago, has been purchased by a Winnipeg syndicate, and will now be conducted under the name of the McConnell Iron Works Company, Ltd., R. J. McConnell of Carman, Man., will be manager. It is intended by the new company to further increase the manufacturing and repairing facilities of the works.

The Finger Lumber Company, The Pas, Sask., has ordered a 250 h. p. new style Corliss engine from E. Leonard & Sons, London. The engine will be used to drive the new planing mill which the company is building at that point.

A modern sawmill of large capacity is to be built at Prince Rupert, B. C., by the British Canadian Lumber Corporation, Ltd., which possesses a large area of first-class timber on Graham Island, one of the Queen Charlotte group.

A match factory operating thirty-six machines is to be erected at New Westminster, B. C., by the Dominion Match Company, backed by United States capital. The plant is expected to be in operation within three months.

The Ocean Falls Company, Ltd., has made application to the British Columbia water commissioner for a license to use 1,100 cu. ft. of water per second from Link River, which empties into Cousins Inlet. The water is to be used for paper and other industrial plants, hydraulic power and pulp mill purposes.

The Canadian Puget Sound Lumber Company, Ltd., Victoria, B. C., has surveyors at work planning the route of a standard logging railway from Jordan River to Sooke Harbor, a distance of about 20 miles along the west coast of the island. If a favorable route can be secured it is likely the company will construct its new saw mill at Sooke Harbor, which offers commanding advantages.

It is said that the Western Canada Flour Mills Company, Ltd., Winnipeg, intends erecting a large grain elevator and a flour mill at Vancouver, B. C.

The Saskatchewan Coöperative Elevator Company, Regina, Sask., is making good headway in establishing elevators at different points in that province for the

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handling of this season's crop. The Manitoba Government Elevator Commission is also building quite a number of new elevators and renovating old ones.

C. H. Mohr, of Minneapolis, Minn., is negotiating with the Board of Trade at Wolsley, Sask., in connection with the establishment of a flour mill of 150 barrels capacity at that point.

Government Purchases

WASHINGTON, D. C., October 16, 1911.

The Paymaster-General, Navy Department, Washington, will open bids October 31, under schedule 3908, for two electric hoists, one band self feeding, ripping and re-sawing machine, one double cylinder four roll surfacer; under schedule 4003, for three 4-spindle drill presses, one set penumatic flanging clamps, one rapid punch and riveter, one power press or brake, one 3-spindle radial boiler plate drill.

Major C. H. McKinstry, Defensive Works, Philippines Division, Manila, P. I., will open bids November 8 for water tube boilers and on December 4

for engines, generators, synchronous converters and potential transformers, condensers, pumps, feed water heater and forced draft fans.

The Bureau of Supplies and Accounts, Navy Department, Washington, opened bids October 10 for one lock seaming machine, semi-automatic, as follows:

Bidder 19. E. W. Bliss Company, Brooklyn, \$975; 25, Berger & Carter Company, San Francisco, Cal., \$700; 104, Manning, Maxwell & Moore, New York, \$700; 133, Rix Compressed Air & Drill Company, San Francisco, Cal., \$795 and \$835; 152, Toledo Machine & Tool Company, Toledo, Ohio, \$446.

The Supervising Architect, Treasury Department, Washington, opened bids October 10 for mechanical equipment, excepting elevators and mail handling apparatus for the United States Post Office, Washington, D. C. Various alternate bids were received. Bids for all work and material complete are as follows:

Bidder 1, Warner & Rittenhouse, Washington, D. C., \$208,092; 2, W. G. Connell Company, New York, \$208,399; 3, York Engineering Company, York, Pa., \$209,000; 4, Fitzpatrick & Hoepfner, Columbus, Ohio, \$214,700; 5, John W. Danforth Company, Buffalo, N. Y., \$215,490; 6, Hanley-Casey Company, Chicago, Ill., \$220,790; 7, S. Faith & Co., Philadelphia, Pa., \$224,900; 8, Hobbs & Doyle, Philadelphia, Pa., \$230,000; 9, Crook-Kries Company, Baltimore, Md., \$249,945; 10, William A. Pope, Chicago, Ill., \$256,450.

New Tools and Appliances

This is essentially a news department for which information is invited.

New Air Compressor.—H. Edsall Barr, 502 Masonic Temple, Erie, Pa., has recently developed a new type of air compressor. This machine can be driven by belt or direct-connected electric motor or steam engine. The power economy is said to be high, due to the use of the two-stage cycle of compression with adequate cooling between the stages. The complete cycle is accomplished in one cylinder having a high and a low pressure bore and a trunk piston of the proper diameters. The cylinder is single-acting. The bed is of the vertical inclosed type and rests directly on the foundation without a sub-base. One of the special features is the easy accessibility of all parts for inspection. The power and the compressing cylinders are located at right angles, an arrangement which is said to give the same smooth operation as that found in a duplex machine.

Automatic Fire-Retarding Damper.—An improved type of automatic fire-retarding damper has been recently placed on the market by The Pullman Automatic Ventilator Mfg. Company, York, Pa. This damper is designed to be used in connection with the company's Pullman ventilating cowl and is kept open by a fusible link, but as soon as sufficient heat is generated this link melts and permits the damper to drop across the pipe, thus cutting off the draft.

New Oil Engine.—A new vertical multiple-cylinder type of engine employing distillate, domestic fuel oil and solar or gas oil as fuel has been developed by the Sheffield Gas Power Company, Eleventh street and Winchester avenue, Kansas City, Mo. Although burning all three types of fuel, the engine was especially designed for handling gas oil, having a specific gravity of about 39 deg. Baume. This oil is practically unsalable on account of the enormous demand for gasoline and as a result the price is low. The heavier products are removed from the oil, which makes it possible to burn it in the cylinder of an engine and secure perfect combustion without fouling the combustion chamber. The fuel consumption per brake horsepower hour is approximately $\frac{1}{8}$ gal. and it is claimed that with a 50-hp. engine it is possible to develop power cheaper than with a Corliss engine of five times that capacity operated condensing. The cost of these new engines is said to be only slightly greater than those employing natural gas as fuel.

Crank Shaper.—The Ohio Machine Tool Company, Kenton, Ohio, has recently brought out a line of single and back geared crank shapers with strokes ranging from 16 to 24 in. Pan construction is employed for the base. The table is adjustable in the vertical plane so that shafts having a maximum diameter of $2\frac{3}{4}$ in. can be passed under the ram for keyseating. Eight speed changes for the ram, ranging from 16 to 70 strokes per minute, are available on the 18-in. single geared shaper, the limits

being 7 and 115 strokes for the back geared tool of the same size, and this number of variations is doubled by using double-speed countershafts. All adjustments of the ram and the length of the stroke can be made from the working side of the shaper while it is in motion.

New Offset Side Tool.—An offset side tool designed for allowing close working to the shoulder of the tool or to the chuck on a lathe and embodying features peculiar to others of the Red E tools recently described in these columns has been brought out by the Ready Tool Company, Bridgeport, Conn. It is difficult to describe the tool without an illustration and it is probable that a sample may be obtained for the asking. The shank has a special end which admits the use of flat steel such as $\frac{3}{4} \times \frac{3}{4}$ in. or $\frac{7}{8} \times \frac{3}{16}$ in. The flat steel fits into a slot designed in relation to its position in the tool to transmit the pressure through the tool shank. At the same time it allows for the sharpening of the tool by treatment of one face only, obtaining automatically the clearance at both side and front desired in securing maximum output from metal cutting tools. Emphasis is placed on the rigidity obtained with the tool. Thinner flat steel for the cutting material may be used, an adjusting screw being provided to this end.

The New York Electric Tool Company, manufacturer of Carver electric tools, has removed its main office from its former location at 136 Liberty street, New York City, to West Newton, Mass. Allen F. Carver, the designer of the company's line of electric tools, will continue his relations with the company. The business and financial management of the company has been assumed by new interests. The president is now George P. Bullard, president of the Eastern Expanded Metal Company and president of the United States Electric Signal Company, and the treasurer is Roland F. Gammons 2d, treasurer of the West Newton Savings Bank and treasurer of the United States Electric Signal Company. The New York Electric Tool Company announces that hereafter it will be managed in an energetic and progressive manner; its manufacturing facilities will be of the most modern character, and its financial resources of sufficient strength to guarantee the fulfilment of its contracts and to provide for the advancement of its business along progressive lines.

The Triumph Electric Company, Cincinnati, Ohio, reports a rapidly increasing export business. Last week a carload of equipment, including several large generators and motors, was shipped to Pekin, China. Inquiries and orders have been received from India, Cuba and New Zealand. The company also reports a large volume of business in the past six months, the sales aggregating more than 50 per cent. over the previous 10 years average.

The Brown Hoisting Machinery Company, Cleveland, Ohio, announces the opening of its San Francisco office, in the Monadnock Building, with J. P. Case as manager. A. W. Merryweather is manager of its Chicago office.

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